Revision Hip Arthroscopy in 2023: My Experience

University of Minnesota
Department of Orthopaedic Surgery
Grand Rounds
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WOSM *Washington Orthopaedics & Sports Medicine*

ALIGNED ORTHOPEDIC PARTNERS

Disclosures

- Consultant for Stryker Sports Medicine

Persistent Hip Pain

Who is this patient?

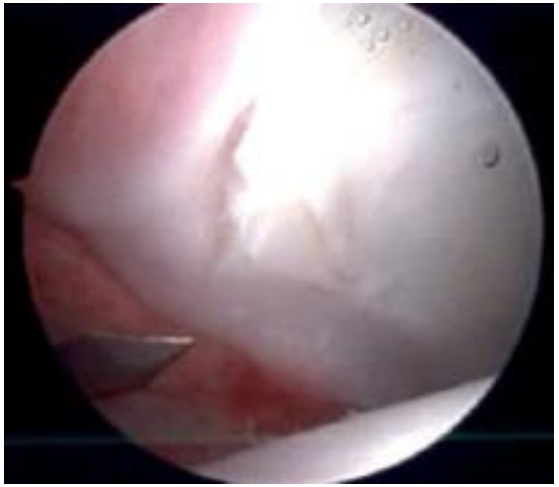
Hockey Bros

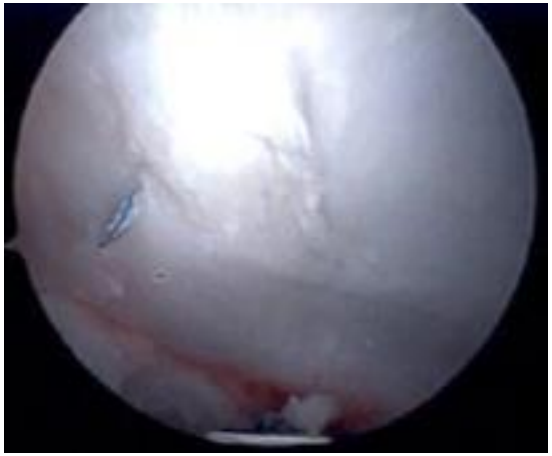
18-year-old Elite Lax Bro

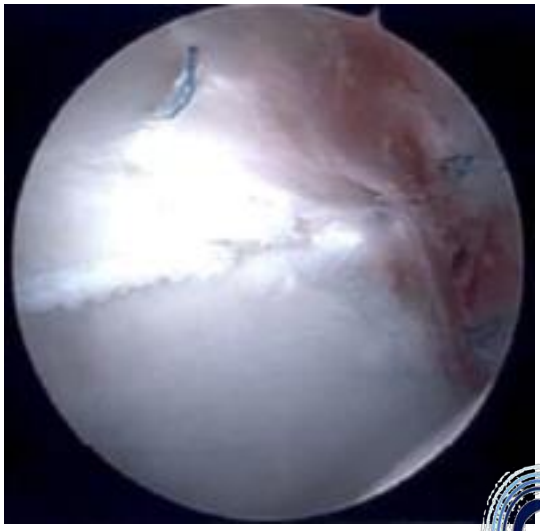
- Pain throughout season managed with NSAID, load management, PT
- Presents 2 weeks after acute twisting injury caused difficulty walking and with ADLs

18-year-old Elite Lax Bro

18-year-old Elite Lax Bro







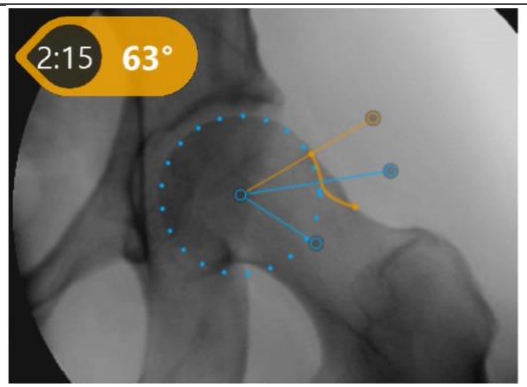
3 months later

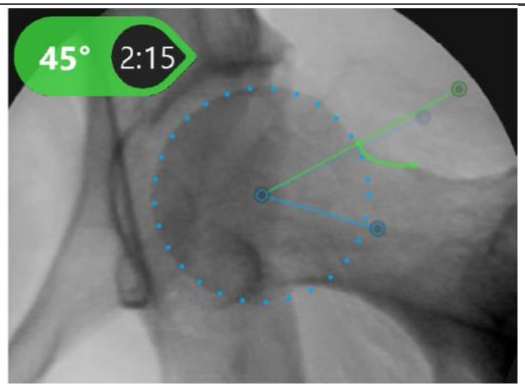
Patient's mom: My Hip Hurts Too...

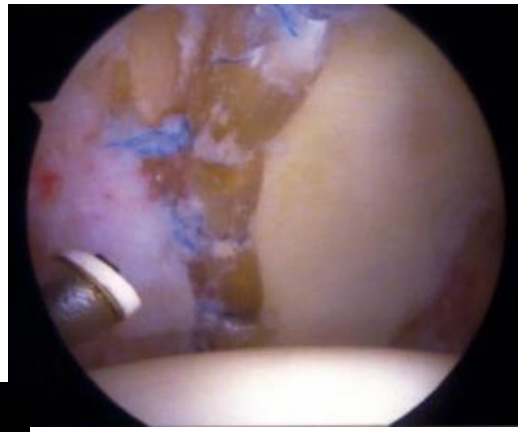
50-year-old Elite Lax Mom

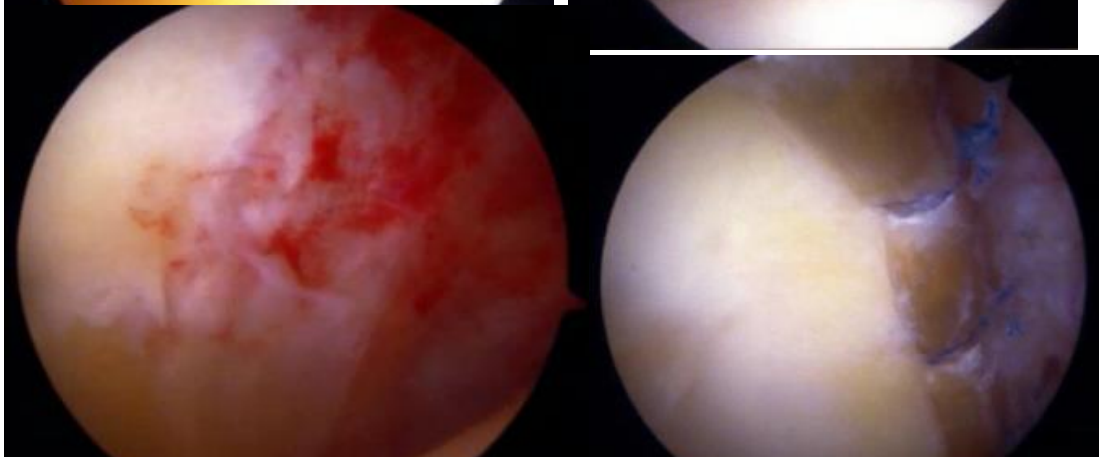
- C-sign pain and lateral hip pain for 2+ years predominately when she walks more than a mile
- Good response to injection
- Has tried multiple rounds of PT
- Substantial DDD, indicated for Lumbar fusion

50-year-old Elite Lax Mom









3 Months Later…

- Patient: This didn't work. I've been doing everything my son did and he was already running and starting to live his best lax bro life. I can barely picture my elite lax mom life yet.
- Me and Grey: Yep.

9 Months Later…

When to Consider Revision Hip Surgery?

- Recovery from Arthroscopic Hip Surgery takes time
  - 6 weeks: Return to ADLs and light exercise without much discomfort
  - 12 weeks: Begin Return to running progression
  - 6 months full activities without restriction

Recovery Time is Variable

- Patients who generally take longer:
  - Older
  - Longer duration of pain
  - Worse pre-op pain and dysfunction
  - Mild instability
    - Global hyperlaxity / Connective Tissue Disorder
      - Beighton score >4
    - Hip instability
      - Acetabular undercoverage
      - Femoral version
      - Arc of motion >100 deg
  - Concomitant Lumbar Spine pathology
  - Revisions
  - Stormier than expected immediate post-op course

Longer Symptoms Leads to Longer Recovery & Worse Outcome

Short Symptom Duration Is Associated With Superior Outcomes in Patients Undergoing Primary Hip Arthroscopy: A Systematic Review

David Nam-Woo Kim, B.S., Michael S. Lee, B.A., Ronak J. Mahatme, B.S., Stephen M. Gillinov, A.B., Wasif Islam, B.S., Scott Fong, B.A., Amy Y. Lee, B.A., Seyi Abu, Nicholas Pettinelli, M.S., Michael J. Medvecky, M.D., and Andrew E. Jimenez, M.D.

"Patients with hip pain symptoms of less than 2 years before arthroscopic treatment of femoroacetabular impingement syndrome have better outcomes than those patients who had a longer duration of symptoms. However, significant improvements can still be expected regardless of time between onset of symptoms and surgery."

Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol 39, No 2 (February), 2023: pp 498-[illegible]

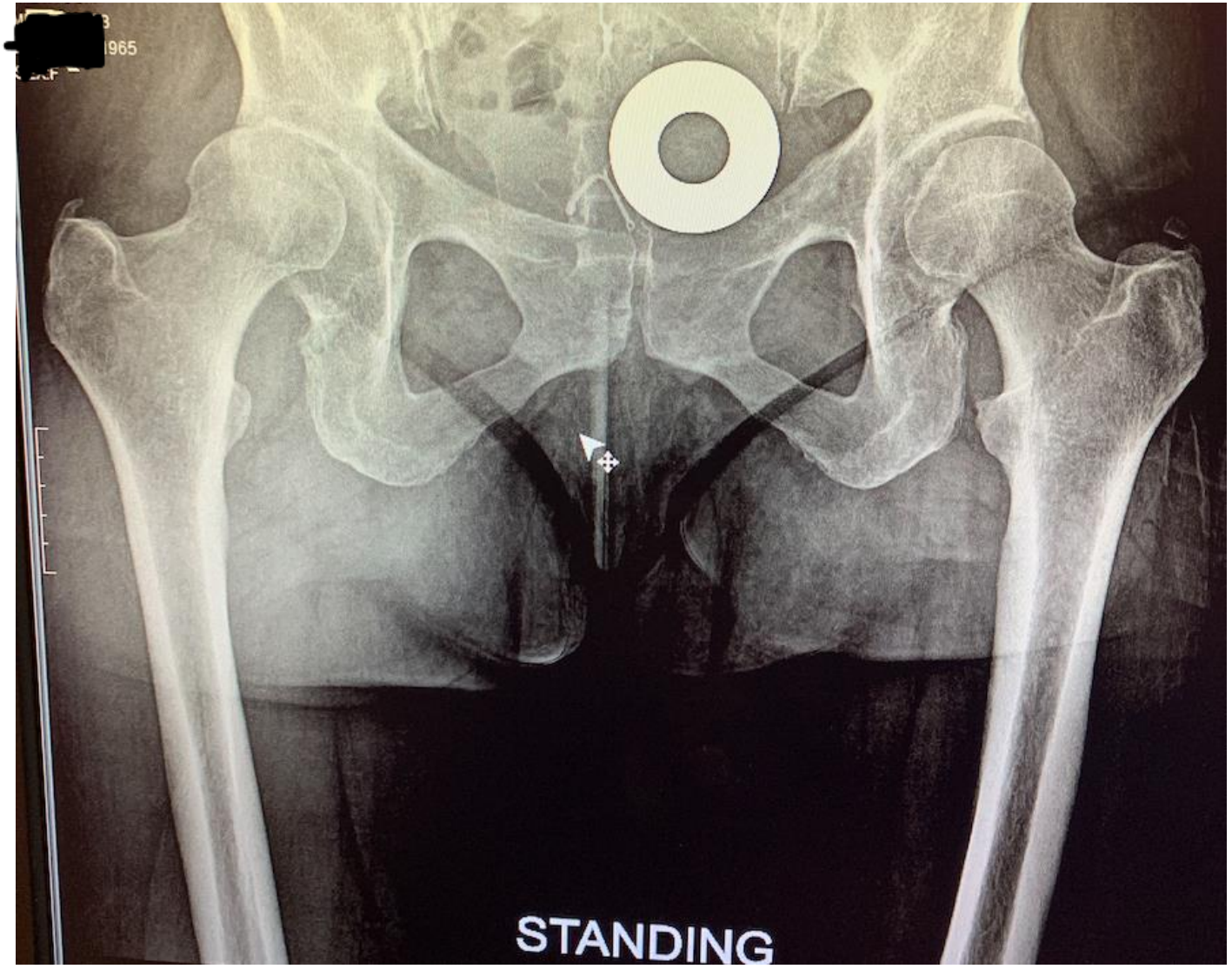
What surgery was done?

- Get relevant pre-op and post-op imaging, operative reports, arthroscopic pictures

- There are procedures with notoriously problematic outcomes
  - Any arthroscopic procedure in the setting of too much OA
  - Arthroscopic procedure in the setting of substantial bony instability

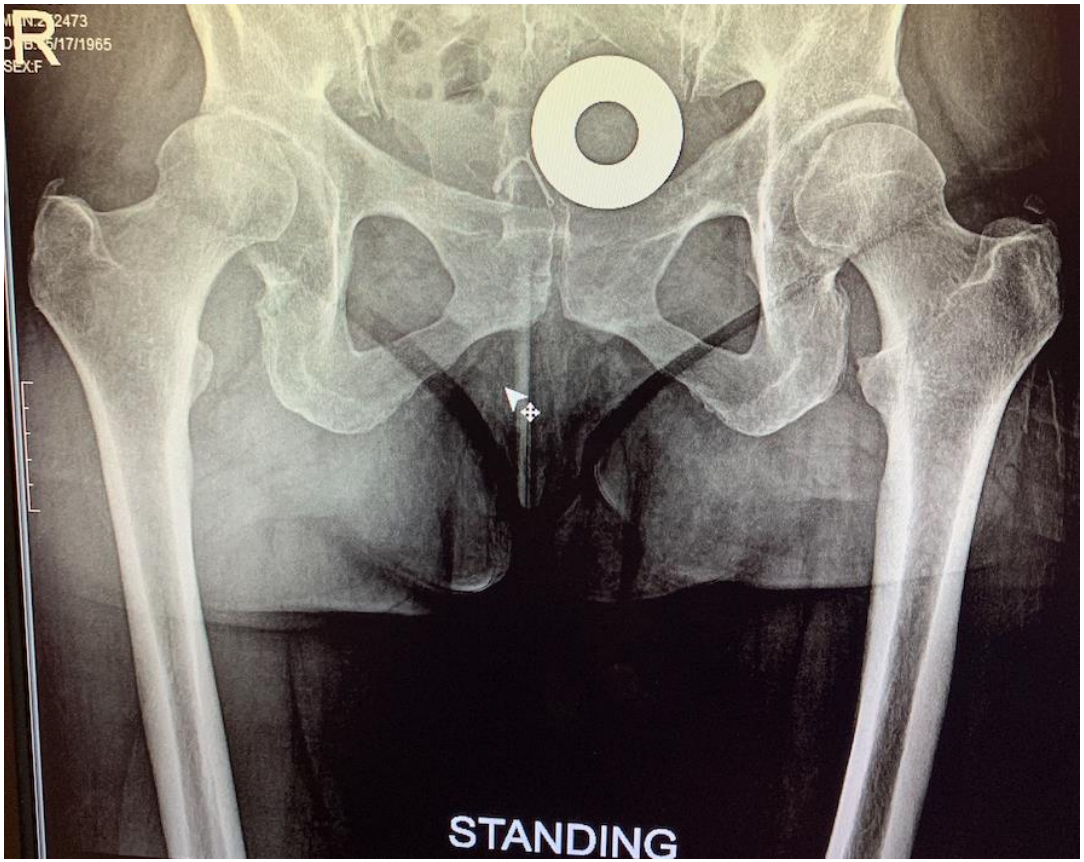
“Here’s my scope pic:”

Get New X-rays



If it's a lost cause…

- Refer them for arthroplasty
- Don't repeat the same mistake!



Good news: we're getting better!

- General knowledge and skill level is improving
- Standard of care much higher
- Still a very long learning curve
- We still have a lot to learn

No Red Flags

- Indications seem right
  - No OA or Dysplasia
- Surgery seems to have been done well
  - Pre- and Post-op imaging ok
  - Scope pics ok
- Consider Timing, Tempo, Trajectory of Post-op course and relative expectations

Timing, Tempo, Trajectory

5 Months Post-op

- 45 year old F 3 years of
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-
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- 21 yr old college female
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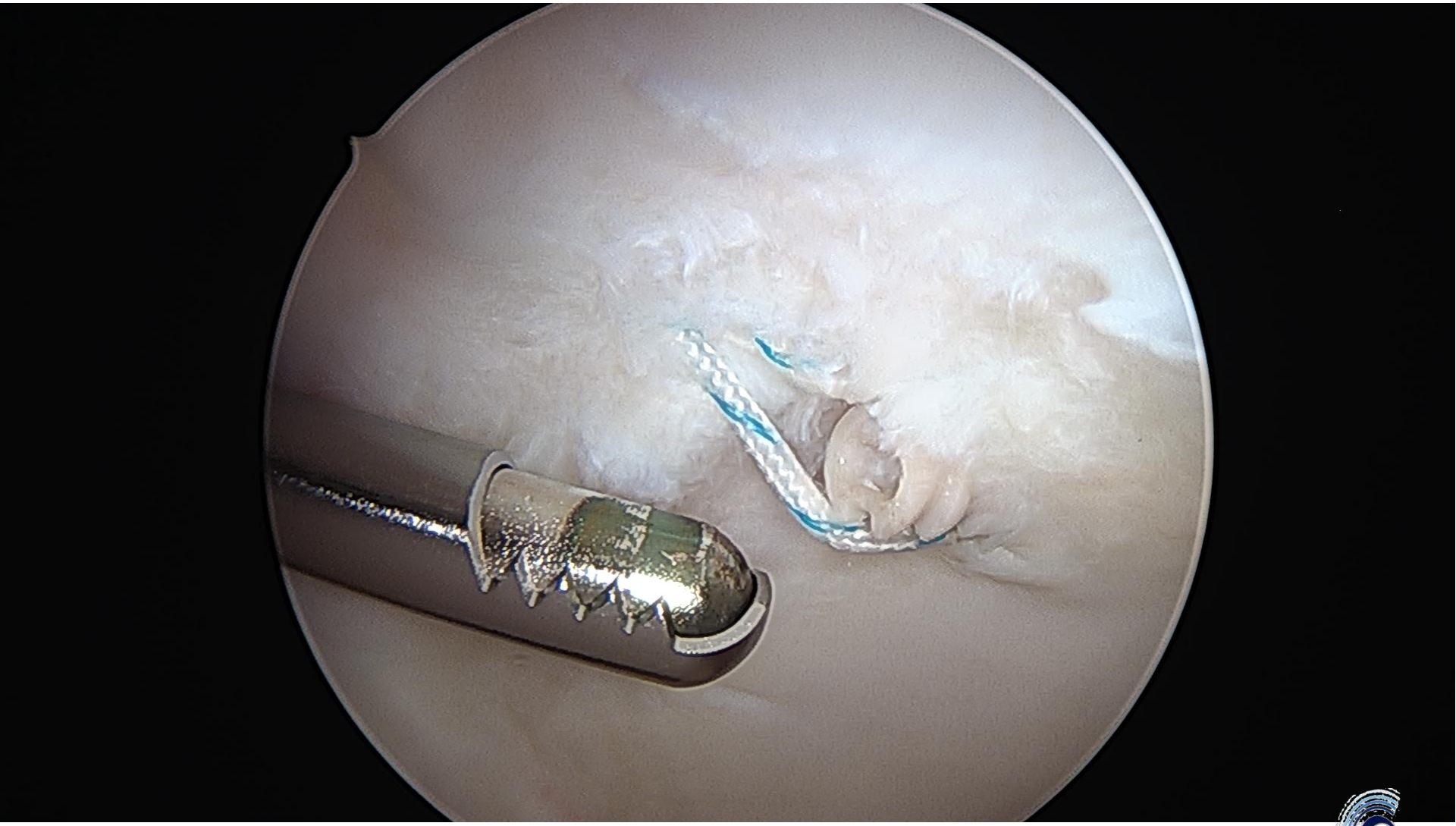
  ove tting
  ses isted
  over 1 month

Timing, Tempo, Trajectory

2 Months Post-op

- 21 yr old professional hockey goalie
- Substantial pain post-op
- Inability to get off crutches



Tempo, Timing and Trajectory

In my practice:

- Try to wait 6 months before new imaging in slow progressors in patients in whom surgery has gone well

- Except
  - acute severe change
  - young person who has never done well after surgery

Start at the Beginning

Why did it hurt to begin with?

History

Traumatic vs. **Insidious**

- Twisting or torqueing
- Subluxation
- Dislocation, associated fracture

Congenital / Developmental

- DDH, Perthes, SCFE

Other

- Infection, PVNS, Osteonecrosis, Synovial Chondromatosis

Difficult Diagnosis

- **Hip pain notoriously difficult to diagnose**
  - Overlapping and concomitant symptoms
  - Back pain, lumbar disc, “sports hernia”, SI joint dysfunction, piriformis pain, trochanteric bursitis, gluteal tears, pelvic floor dysfunction, hamstring pathology…
- Also, high percentage of FAI and labral pathology in asymptomatic patient population
  - Increases with age

Radiographic Prevalence of Femoroacetabular Impingement in Collegiate Football Players

AAOS Exhibit Selection

Ashley L. Kapron, BS, Andrew E. Anderson, PhD, Stephen K. Aoki, MD, Lee G. Phillips, MD, David J. Petron, MD, Robert Toth, PA-C, and Christopher L. Peters, MD

Investigation performed at the University of Utah, Salt Lake City, Utah

- 95% of 134 hips had at least one radiographic sign of cam or pincer FAI
- 72% abnormal alpha angle
- 52% had at least one sign of pincer type FAI

J Bone Joint Surg Am, 2011

Prevalence of Abnormal Hip Findings in Asymptomatic Participants

A Prospective, Blinded Study

Brad Register,* MD, Andrew T. Pennock,† MD, Charles P. Ho,‡ PhD, MD, Colin D. Strickland,§ MD, Ashur Lawand,‖ MD, and Marc J. Philippon,‡¶ MD
Investigation performed at the Steadman Philippon Research Institute, Vail, Colorado

- Labral tears in 69% asymptomatic volunteers
  - average age 37.8 yrs (15-66 yrs)

Am J Sports Med, 2012

“I’m here for my labral repair…”

Radiographic Diagnoses

- **Rarely an indication for surgery**
- Residual FAI, labral “retear”, capsular defect, etc. not indications for surgery.
- **“We’re getting an MRI to know what it’s not.”**
  - Chondrolysis / OA progression
  - Stress fracture, AVN

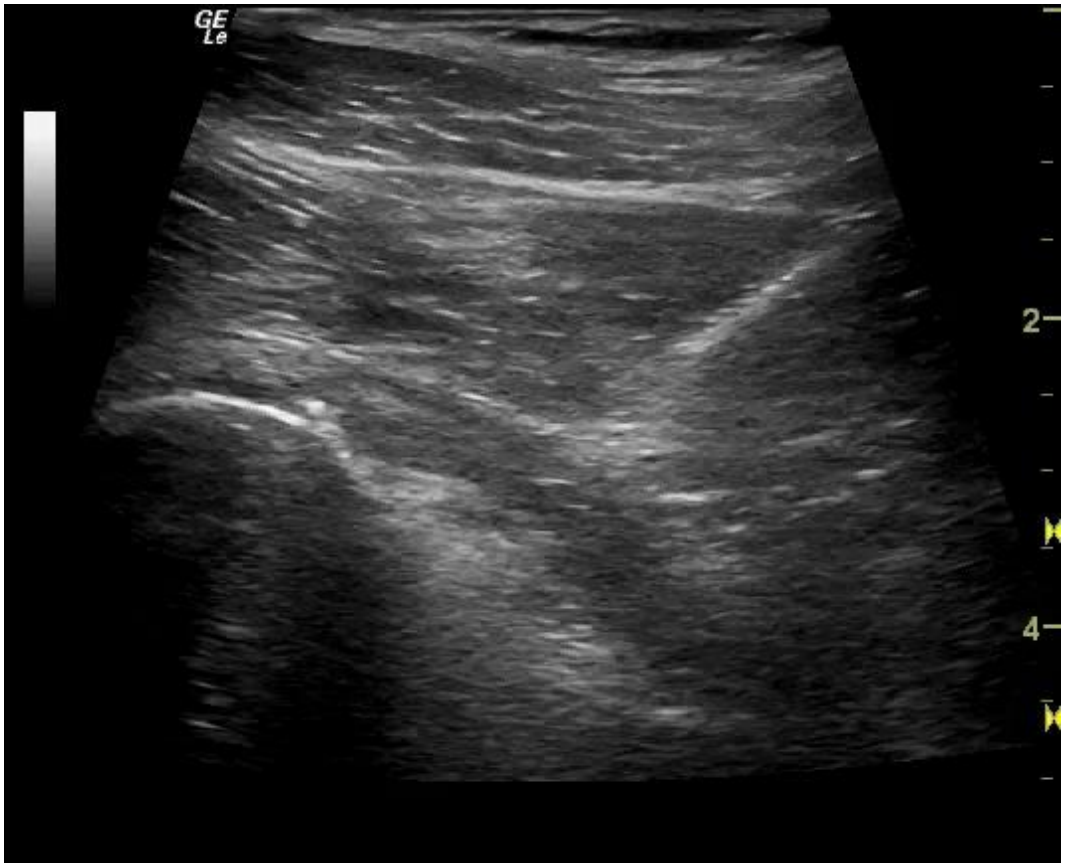
Difficult Diagnosis

Worse when the patient has already had surgery.

Injections

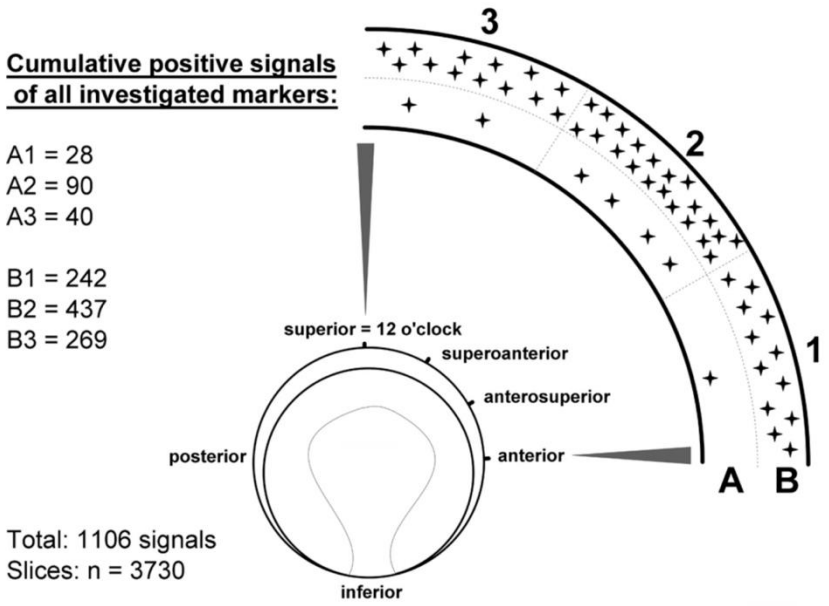
What injections, studies, evaluations did they have pre-op?

- Hip joint
- Iliopsoas
- Troch bursa
- Piriformis
- SI joint
- Spine



Hip Pain Generators

The labrum is a pain generator.

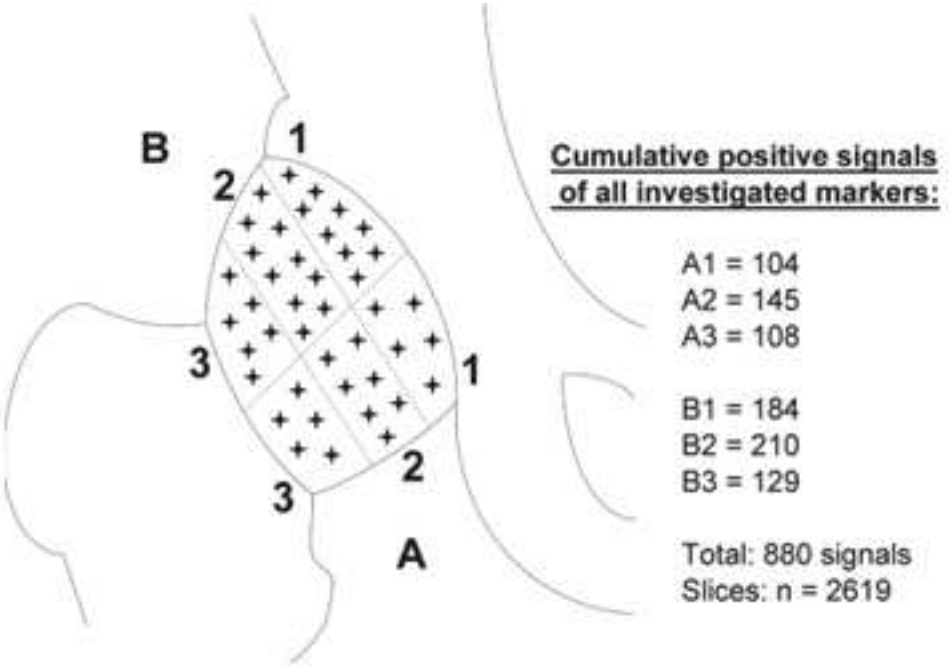


"Within the labrum, pain-associated free nerve ending expression was located predominantly at its base, decreasing in the periphery."

Haversath et al. *JBJS-Br* 2013

Hip Pain Generators

The capsule is a pain generator.

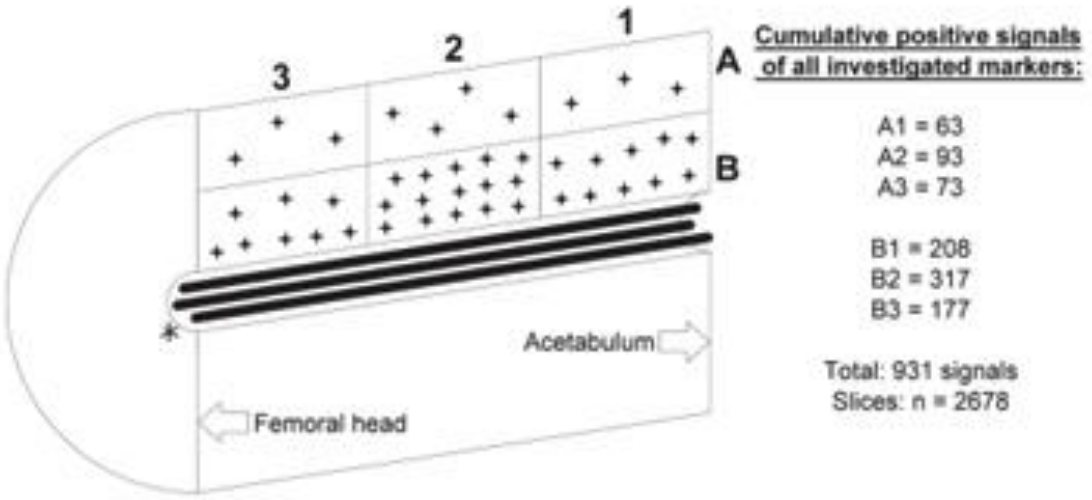


"A highly significant distribution of positive signals was found towards the superior part of the capsule."

Haversath et al. *JBJS-Br* 2013

Hip Pain Generators

The ligamentum teres is a pain generator.



"The innervation pattern of the ligamentum teres showed that most pain-associated nerve fibres can be found close to the centrally located blood vessels and nerve bundles."

Haversath et al. *JBJS-Br* 2013

What is causing the pain?

- Many potential issues
- Tough to be sure which is problem pre-, intra, and post-op

What is causing the pain?

After a Revision surgery…

- They got better, but why?
  - Was it the lysis of adhesions?
  - The labral treatment?
  - The revision bone treatment?
  - The capsular treatment?
  - The forced crutches and restart of PT?
- Reflected in the literature

Be Humble and Thoughtful

- Keep in mind: The patient has already been through a lot.
- Another surgery (“2nd Look”) is still a pretty big deal
- Can I reasonably expect to help this person with a repeat arthroscopy?

What surgery was done?

- Was it the right body part?
- Was it the right procedure?

Who did the surgery?

Defining the Learning Curve for Hip Arthroscopy: A Threshold Analysis of the Volume-Outcomes Relationship.

- NY State database
- 251 surgeons
- 8041 hip scopes
- Overall 12.3% re-operation rate within 5 years
- Frequencies declined for cases in the medium (98-388), high (389-518), and highest (≥519) strata (13.8%, 10.1%, and 2.6%, respectively)

"The learning curve for hip arthroscopy was unexpectedly demanding. Cases performed by surgeons with career volumes ≥519 had significantly lower risk of subsequent hip surgery than those performed by lower-volume surgeons"

Mehta et al. *AJSM* 2018

Is it the same pain?

- Location of pain
- Character
- Triggers

Problems with surgery?

- Common problems in the literature:
  - Undercorrection of FAI
  - Overcorrection of acetabulum
  - Overcorrection of femur
  - Labral “mis”treatment
    - Debridement
    - Eversion
    - Repair of unrepairable tissue

Problems with surgery?

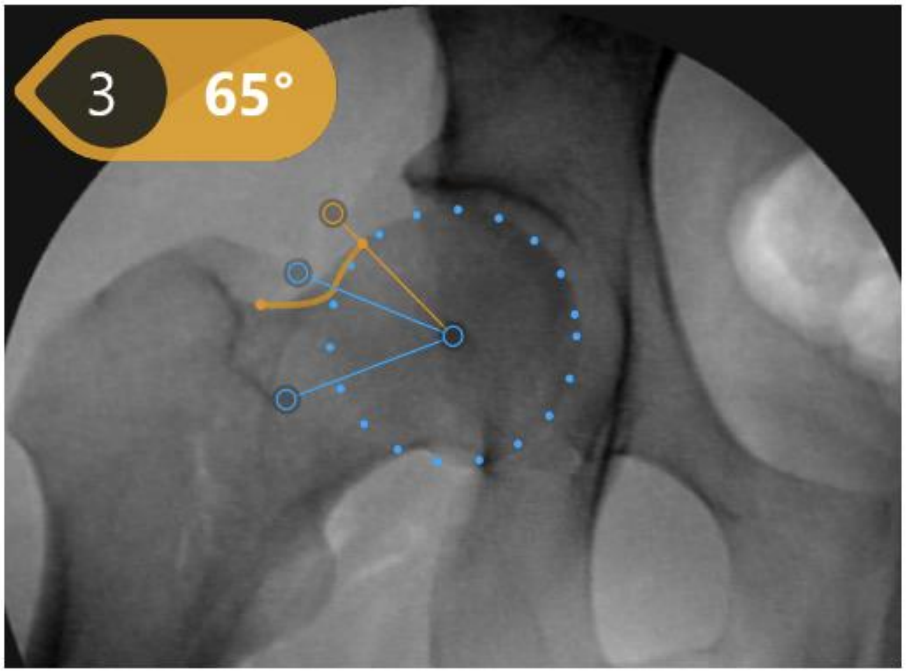
- Problems I see in my practice:
  - Suboptimal correction of FAI:
    - Shark bites
    - Overcorrection of CAM
  - Overcorrection of acetabulum
    - Less of a common problem these days. But can be a very big problem
  - Capsular issues
    - Not closed
    - Re-opened/tore
  - Scar Tissue
  - Iliofemoral ligament defect causing psoas problems
  - Labral “mis”treatment

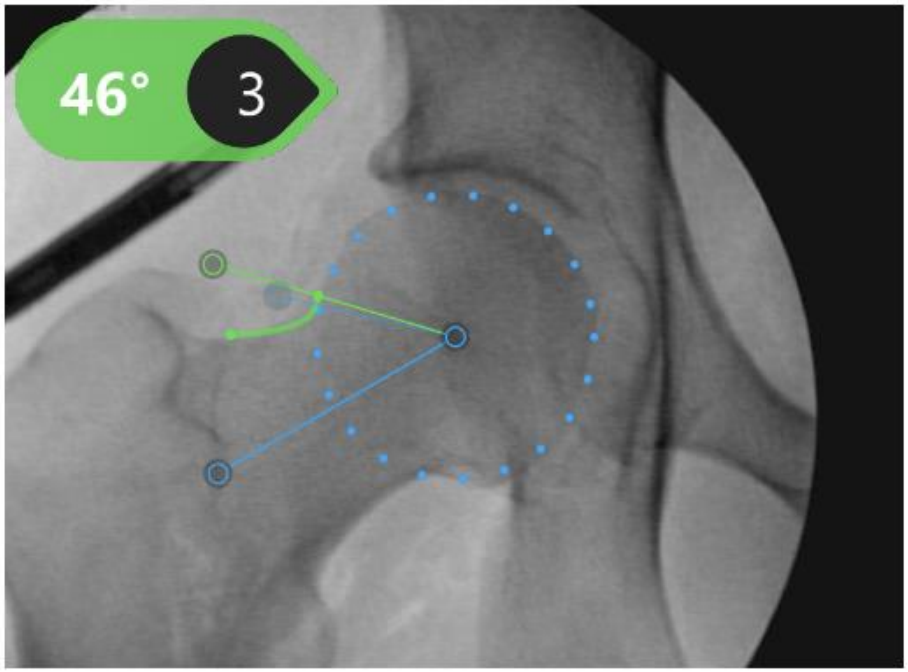
Problems with surgery?

- Problems I see in my practice:
  - Capsular issues
    - Not closed
    - Re-opened/tore
  - Scar Tissue
  - Iliofemoral ligament defect causing psoas problems
  - Labral “mis”treatment
    - Debridement
    - Eversion
    - Repair of unrepairable tissue

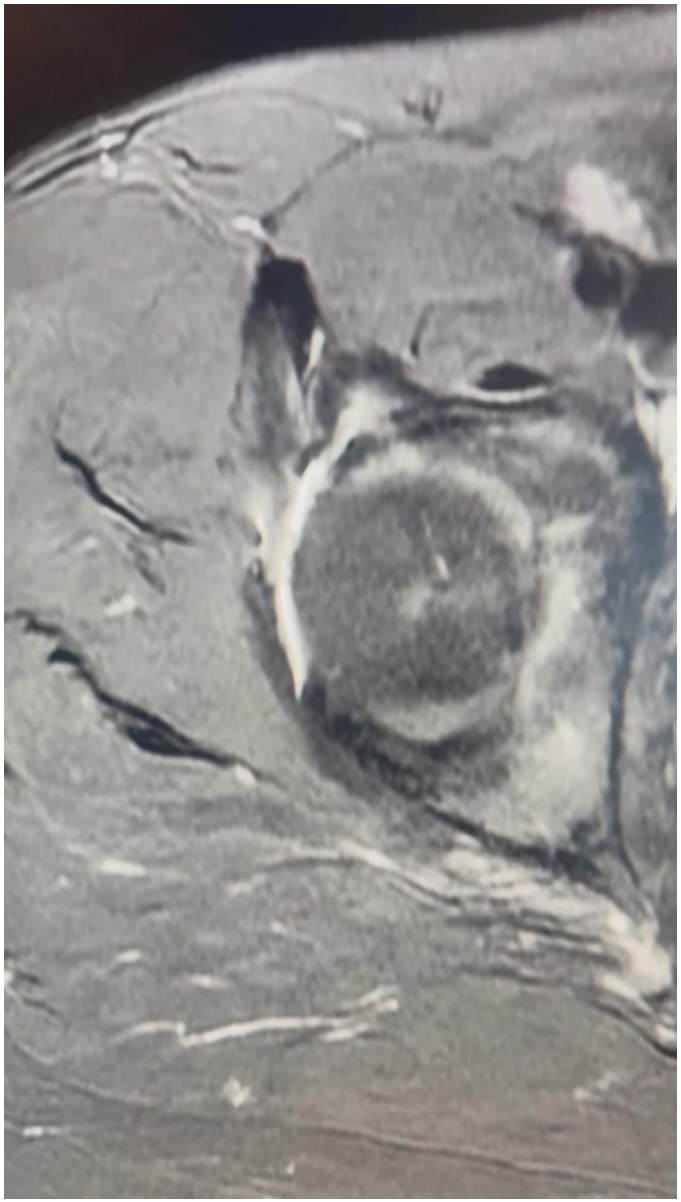
Operative Solutions

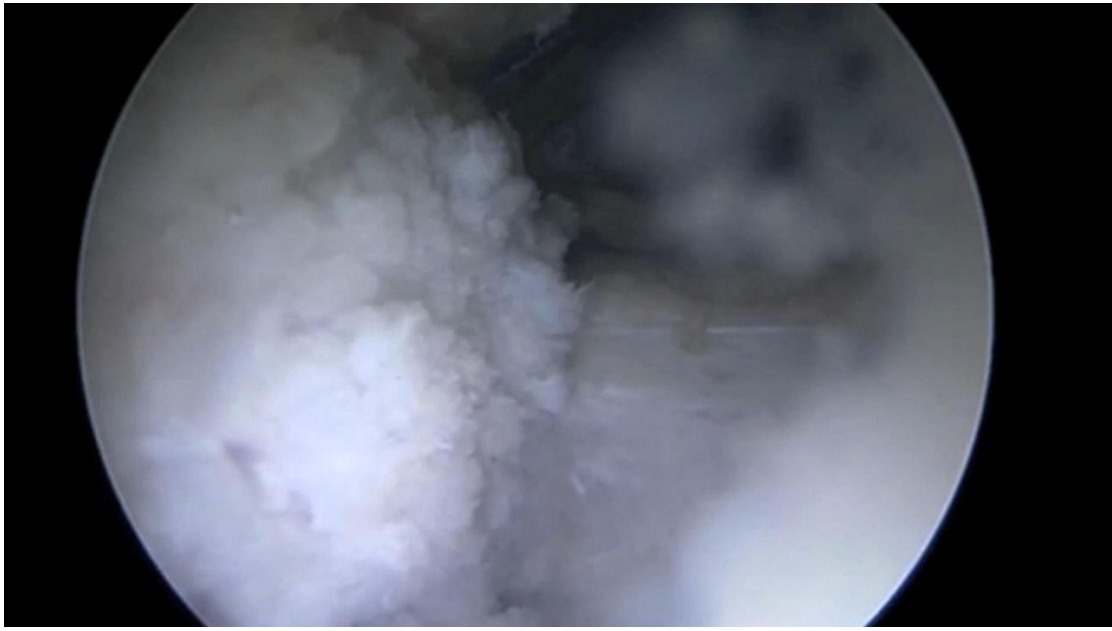
- What to Fix?
  - Undercorrection of FAI





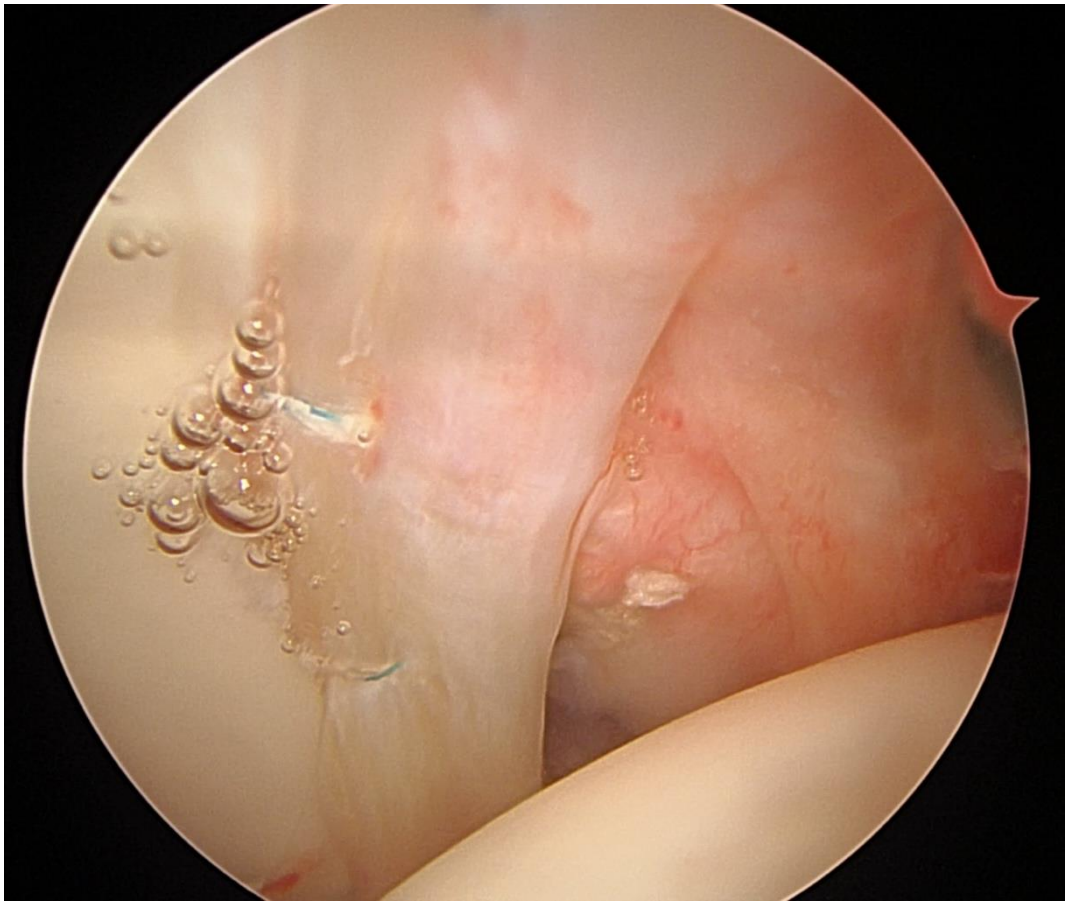
Capsular Issues

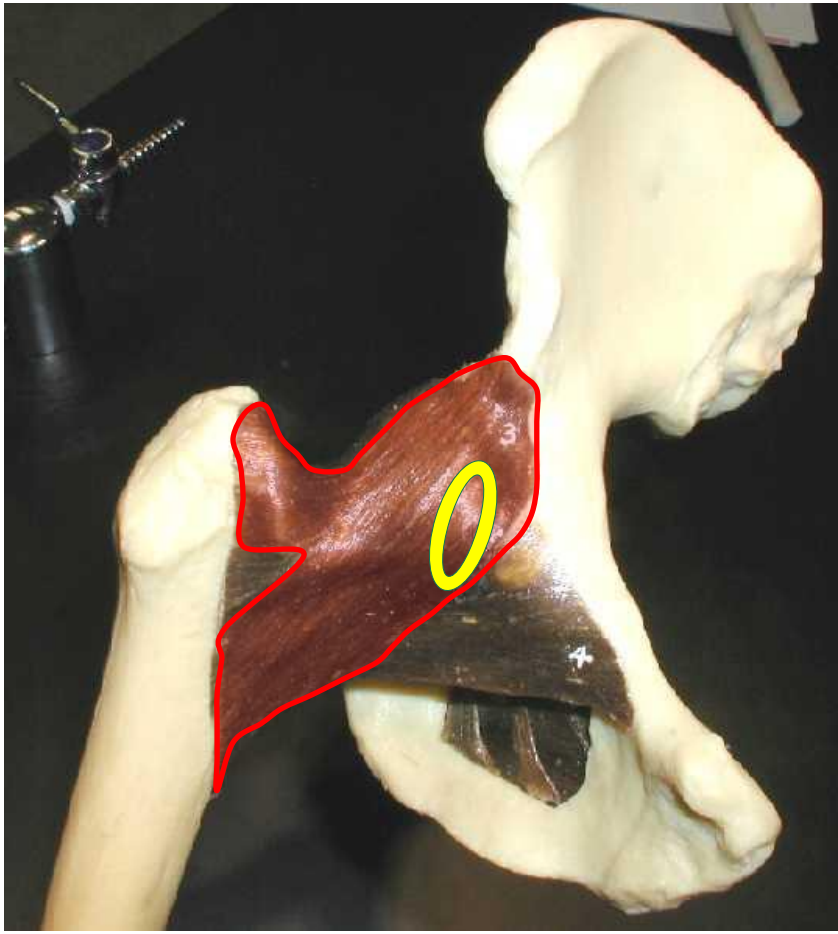




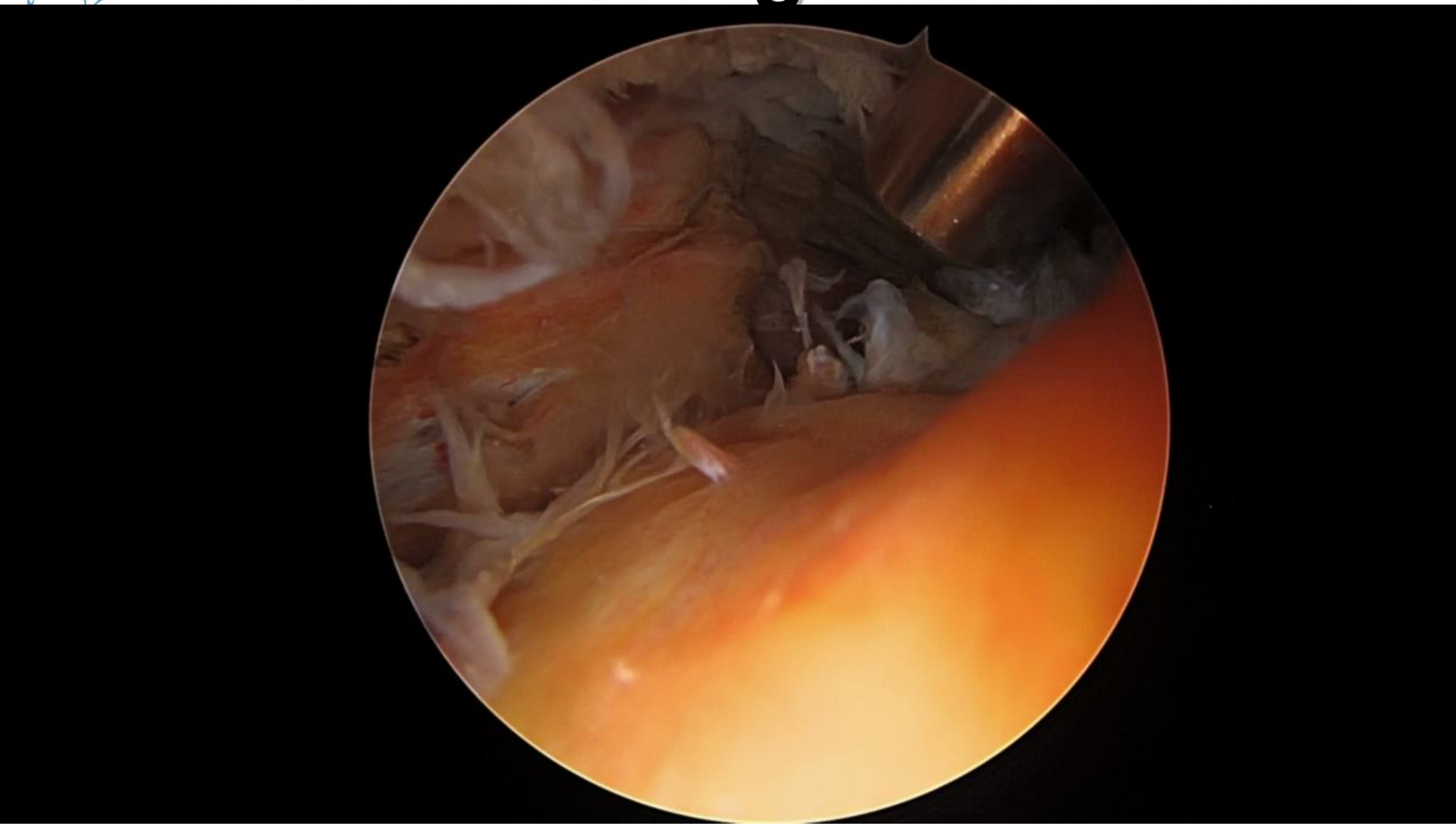
- Capsular defect
  - Especially in patients with microinstability

Iliofemoral Ligament/Psoas





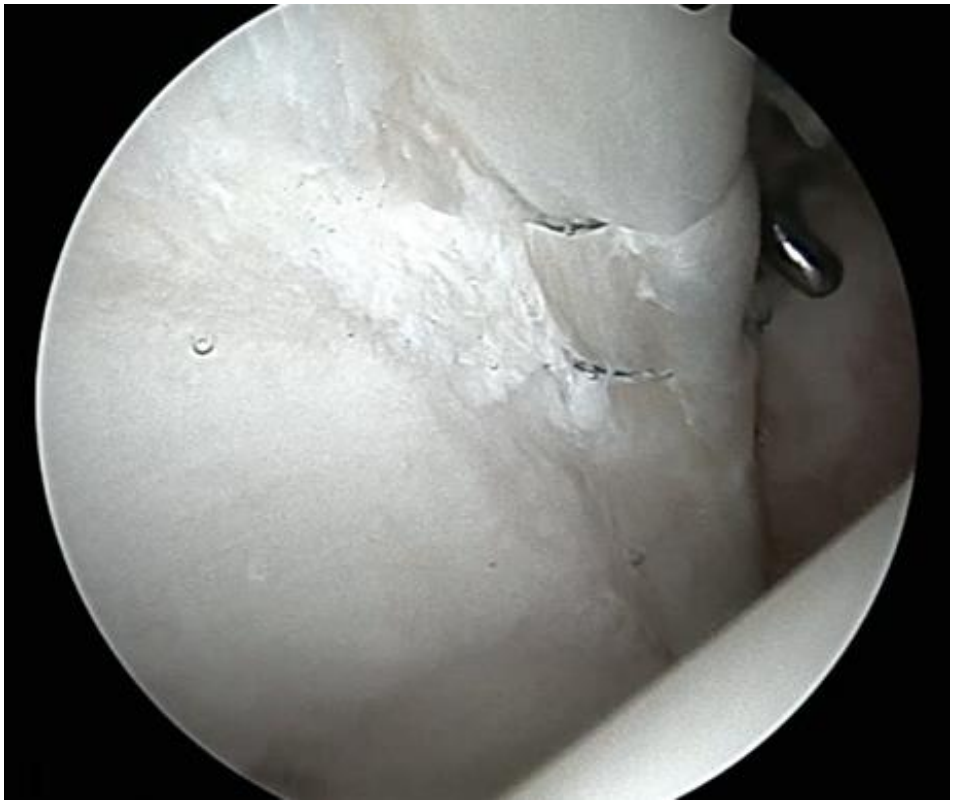
Iliofemoral Ligament/Psoas



The Labrum

We've learned to appreciate the labrum biomechanically and clinically

- Manages joint fluid
- Decreases compression of articular cartilage
- Decreases friction on articular cartilage
- Probably better to have a well-functioning labrum than not



Labral Issues: Personal Journey

- Finished fellowship in 2008 with Marc Philippon
- Few surgeons doing hip arthroscopy with FAI correction, labral repair, capsular closure, etc
- Saw and treated a lot of failed hip scopes
- Wasn't very happy with results with revision repair, debridement

Labral Issues: Personal Journey

- Had done (mostly watched) MJP do 2 approximately 3 cm recons with ITB autograft
- Did first Labral Reconstruction in 2009
    - Tib ant allograft in Police officer who had failed a open dislocation with labral excision after 2 failed hip arthroscopies

Labral Issues: Personal Journey

- Technique evolved to current technique through almost every conceivable iteration
  - Autograft
  - Allograft
    - Tib ant/post
    - Hamstring
    - Fascia lata
  - Segmental
  - Circumferential/Complete
- I've learned through "experience"

Operative Solutions

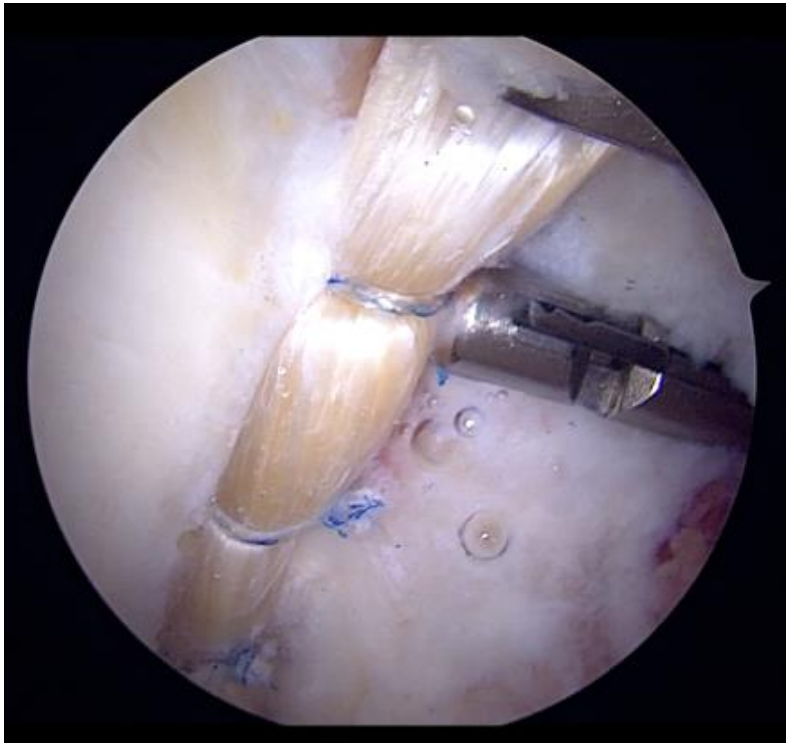
Revision Arthroscopic Acetabular Labral Treatment: Repair or Reconstruct?

Brian J. White MD, Julie Peterson, Mackenzie Herzog

- 104 hips
- Over 92% fu, Minimum of 2 years
- 14 Re-Repairs (50% failure)
- 90 Reconstructions (12% failure)

Arthroscopy. Volume 32, No. 12. December 2016. pp 2513-2520

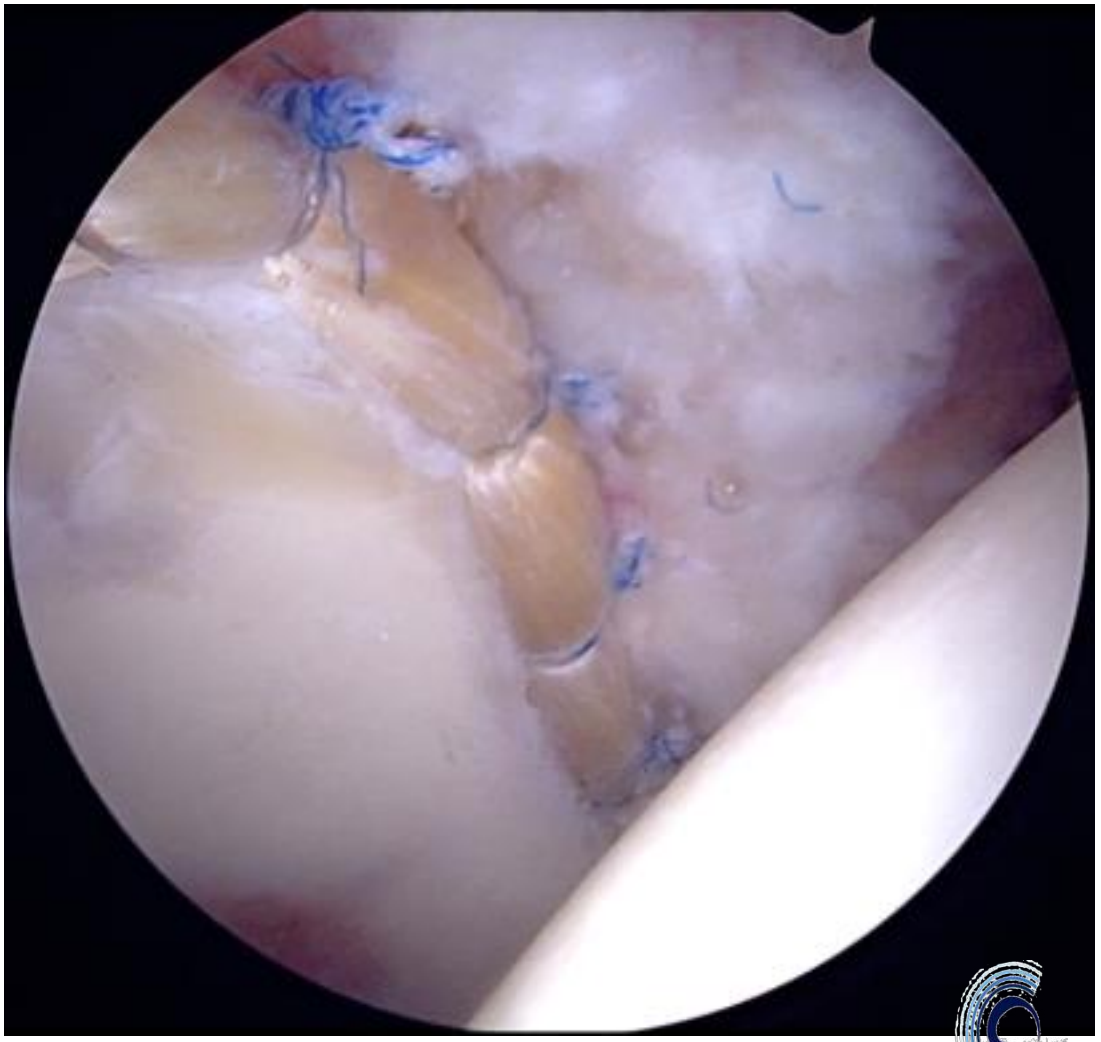
Labral Reconstruction Technique



- Applicable for complete, sub-complete as well as segmental reconstructions
  - **Complete**: Transverse Acetabular Ligament (TAL) anteriorly to near TAL posteriorly
  - **Sub-complete**: Short of TAL on either side
    - Tailor to patient's anatomy
    - If TAL, or TAL-labral junction unstable, need to restore stability or not make instability worse (fix it or stay above it)
      - Get below psoas notch
  - **Segmental**: Shorter grafts that don't span psoas notch or more posterior than 10 o'clock (on Right hip
    - These worry me that junctions graft-labral junctions are in higher stress areas and/or pathology under-addressed

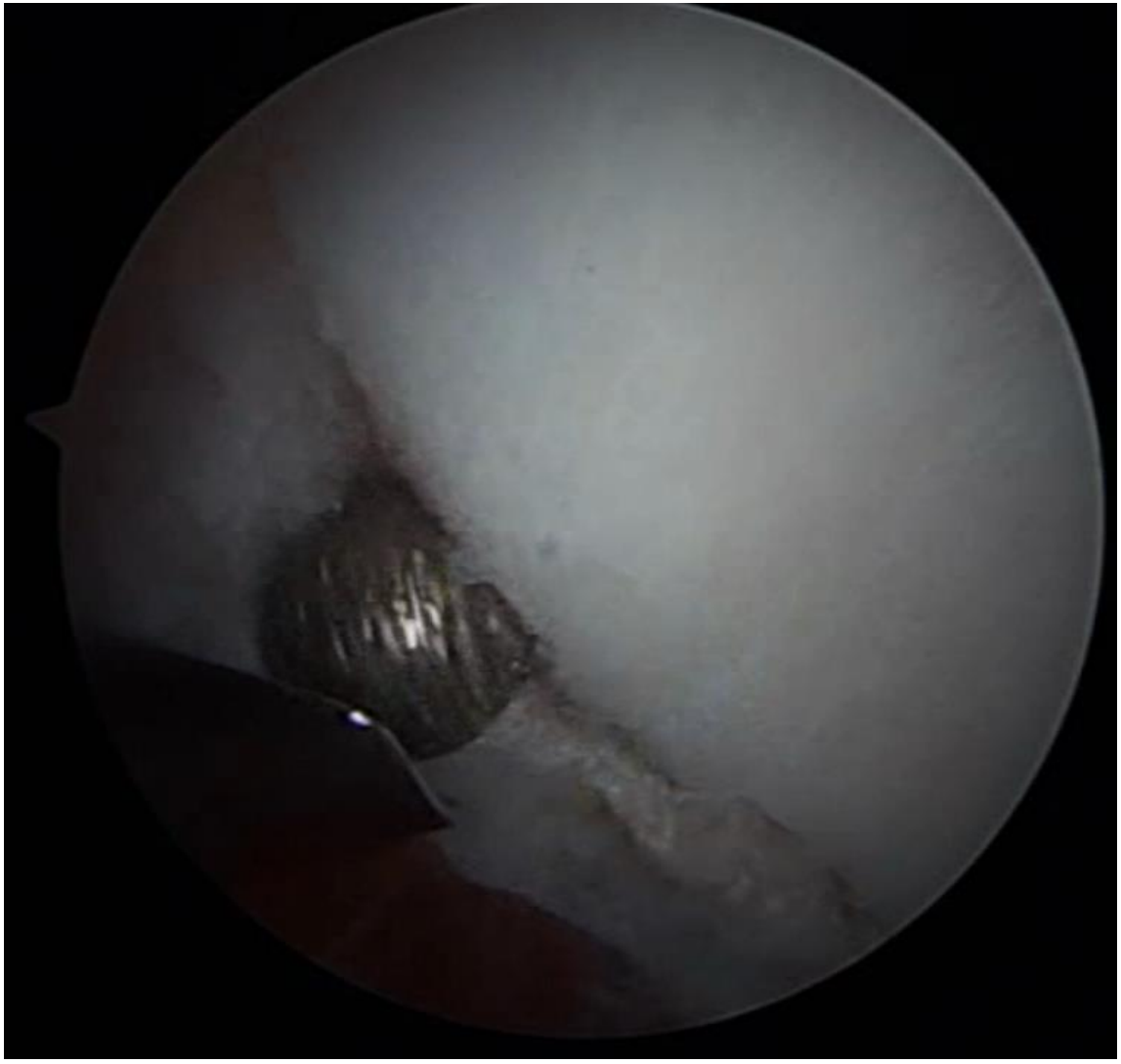
Technical Considerations

- **No need to measure**
  - Measurement of defect is notoriously difficult
  - Inaccuracy is a huge problem in segmental measurements
    - Too short: Lose suction seal
    - Too long: Can get trapped in the joint



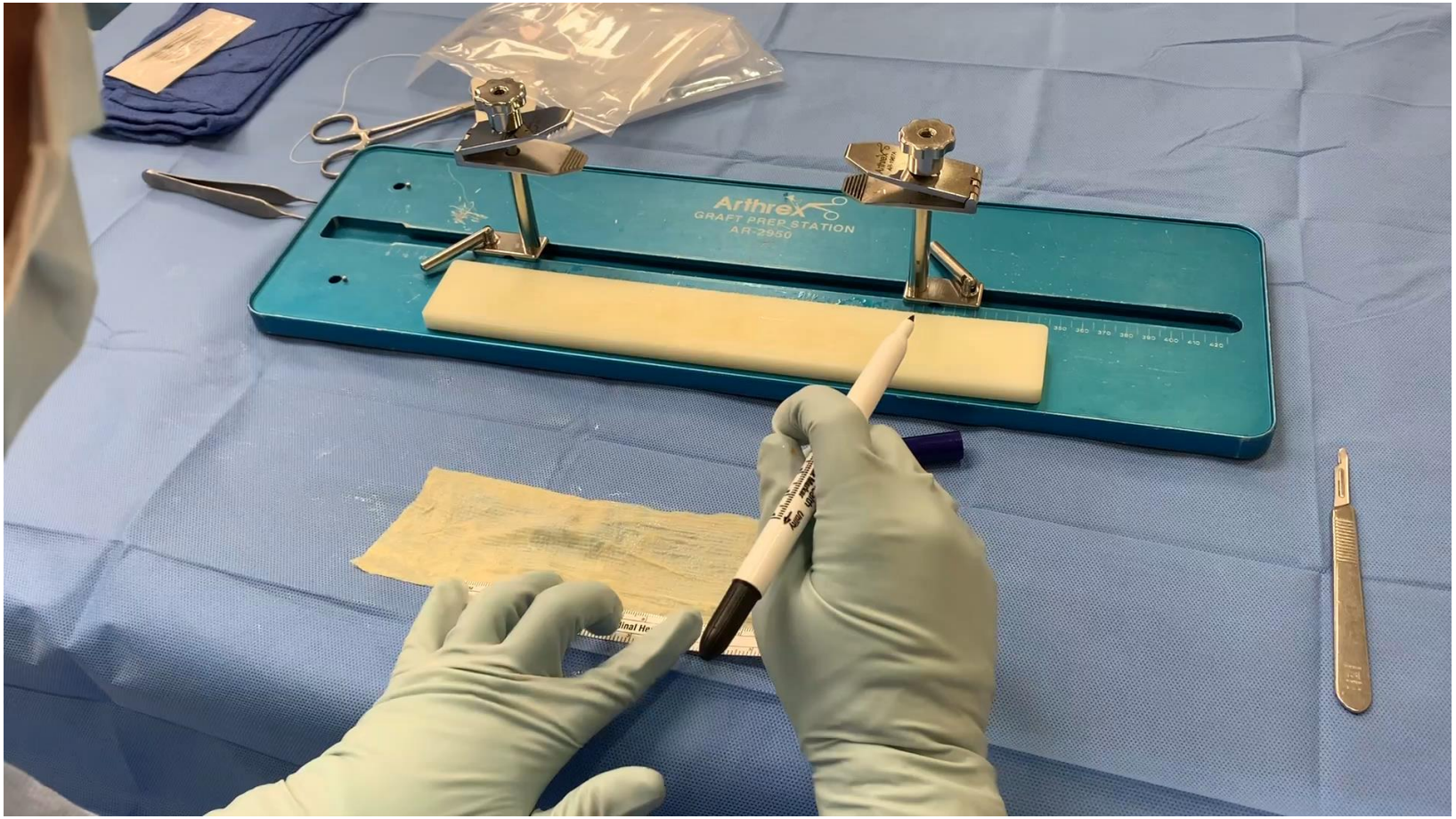
Complete Labral Reconstruction

CLR: Posterior Acetabulum



- Posteriorly get down to at least 8 o'clock position
  - Typically there is normal tissue below 8 o'clock
- Burr behind labrum in this area for subsequent anchor placement

Graft Preparation

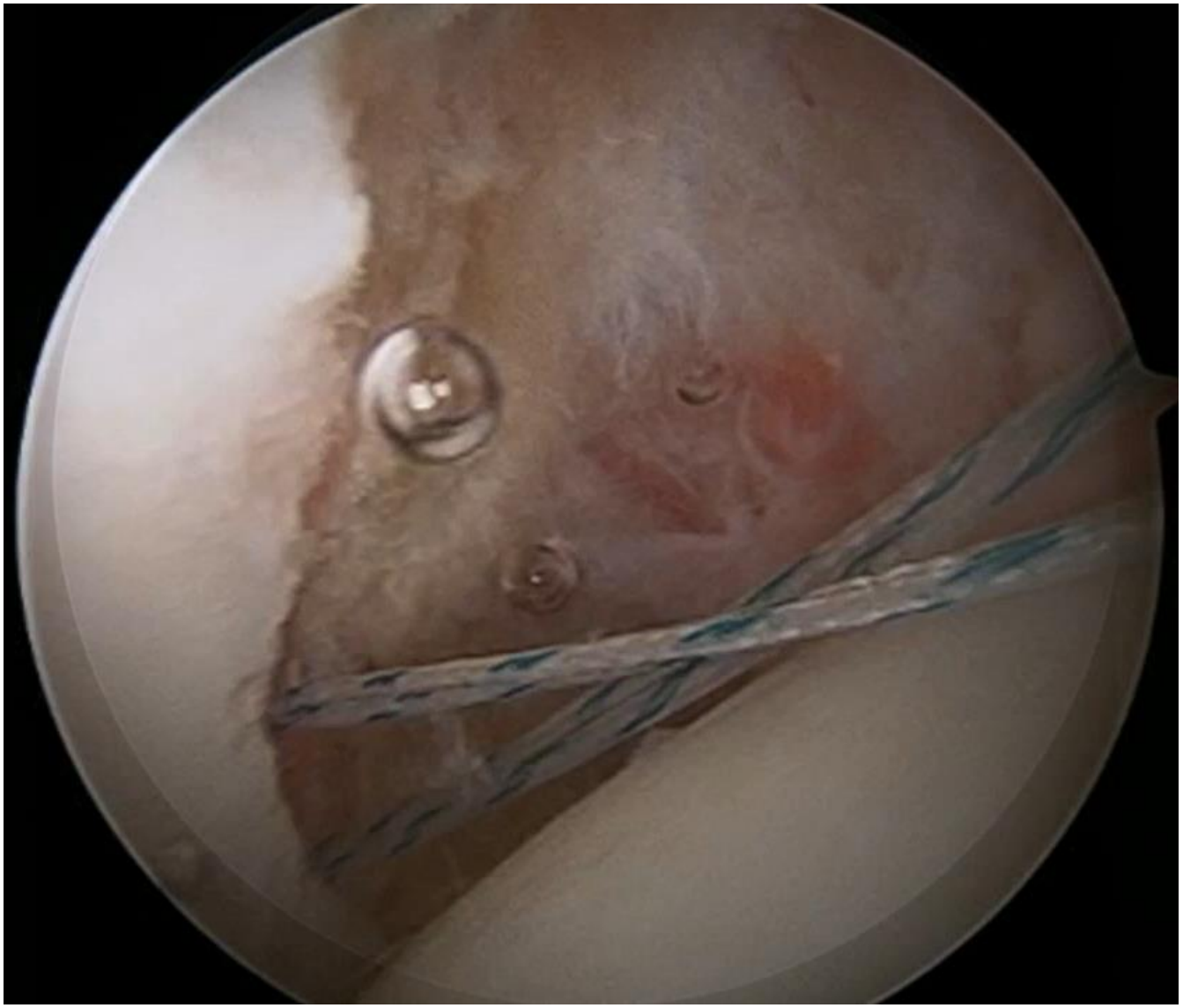


Fascia Lata allograft tubularized with 3-0 non-absorbable braided suture **reinforced** throughout--and on the ends--to act as rip stop sutures and provide cohesion. 6 mm diameter x 80-100 mm length

Anchor Placement

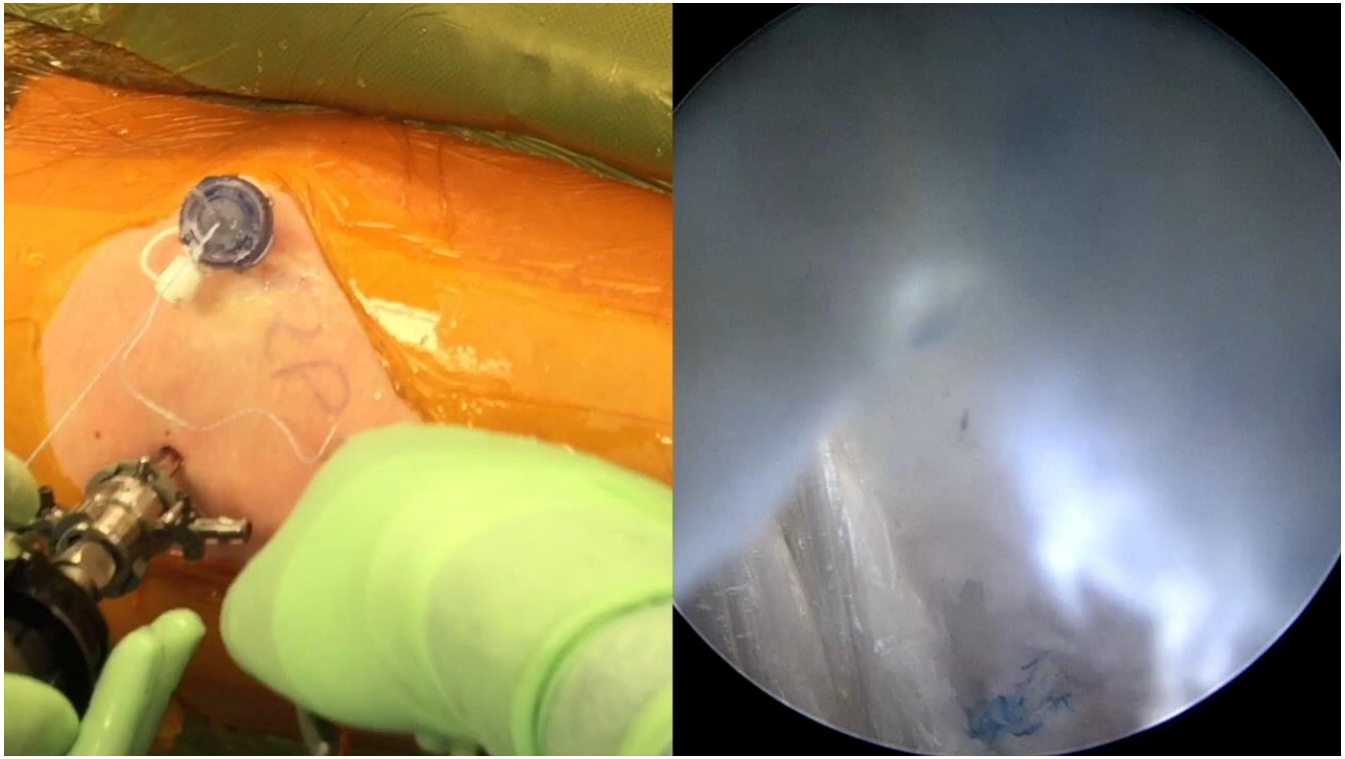
- Close as possible to rim
- Resist temptation to place two end anchors and then fill in the middle
  - Length (and tension) will be a big issue
- Can place several at once or one at a time

Graft Insertion



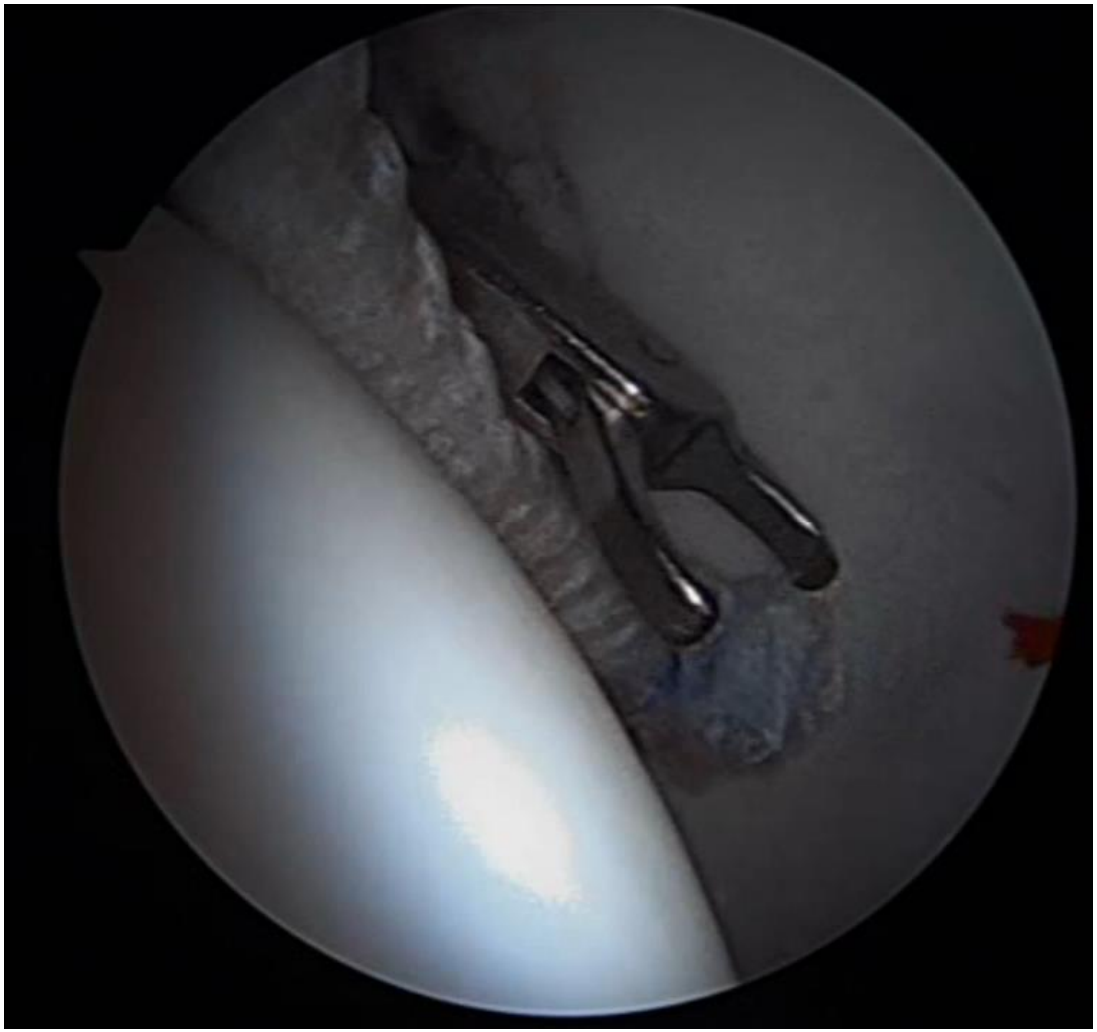
- Pass the graft down suture from anterior inferior anchor

Graft Tensioning and Fixation



- Use atraumatic grasper thru DALA portal to place graft precisely on rim to ensure perfect tension and placement for each successive anchor
- Grab/manipulate graft as little as possible until 11-12 o'clock, then switch portals

Posterior Fixation

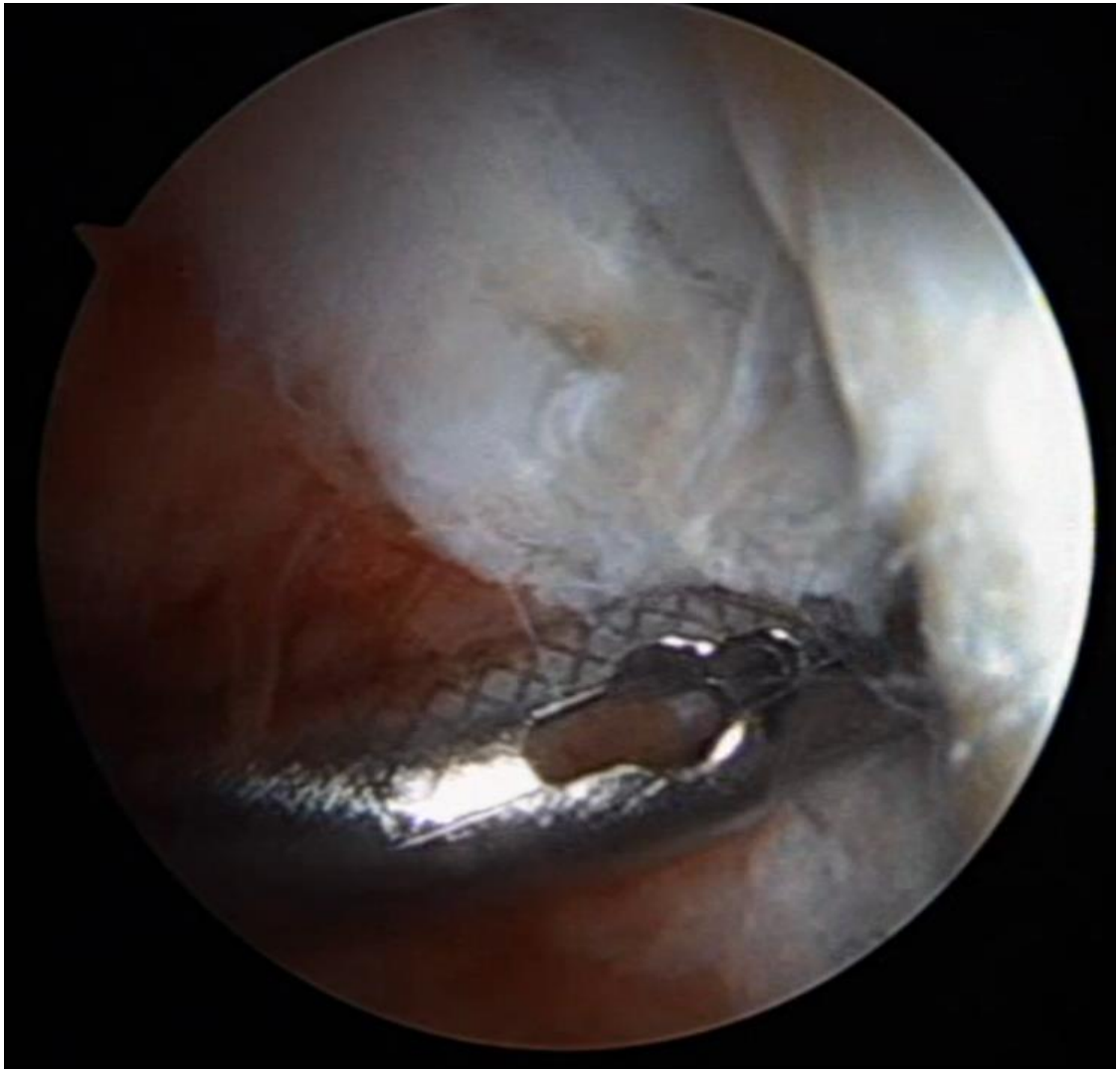


- Anchor behind the native labrum at 7-8 o'clock
  - Can take to junction of TAL if no viable native labral tissue
- Can adjust anchor as well as suture placement to vary the length/tension
- Leftover graft stays out of the joint behind labral remnant in low stress zone

LIGMA Anchor

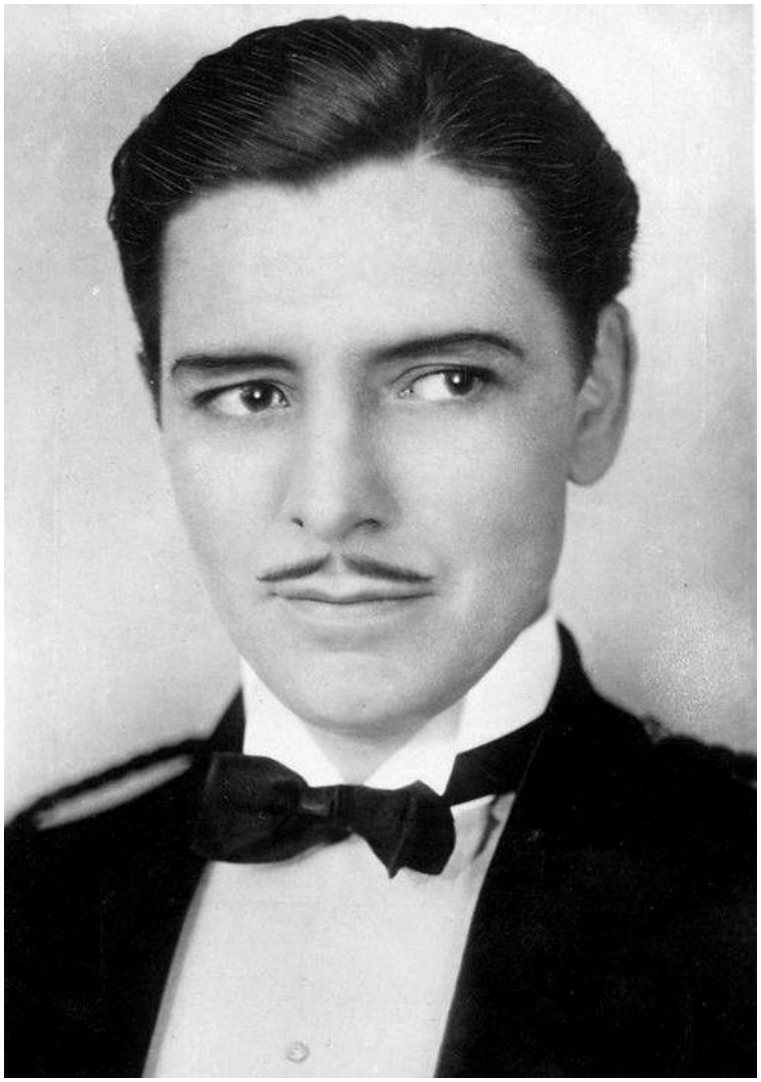
- Length Independent Graft Management Anchor
- 2nd most posterior anchor
- Makes final adjustment to tension and length
- A vertical mattress followed by a loop suture

Postero-Superior Fixation



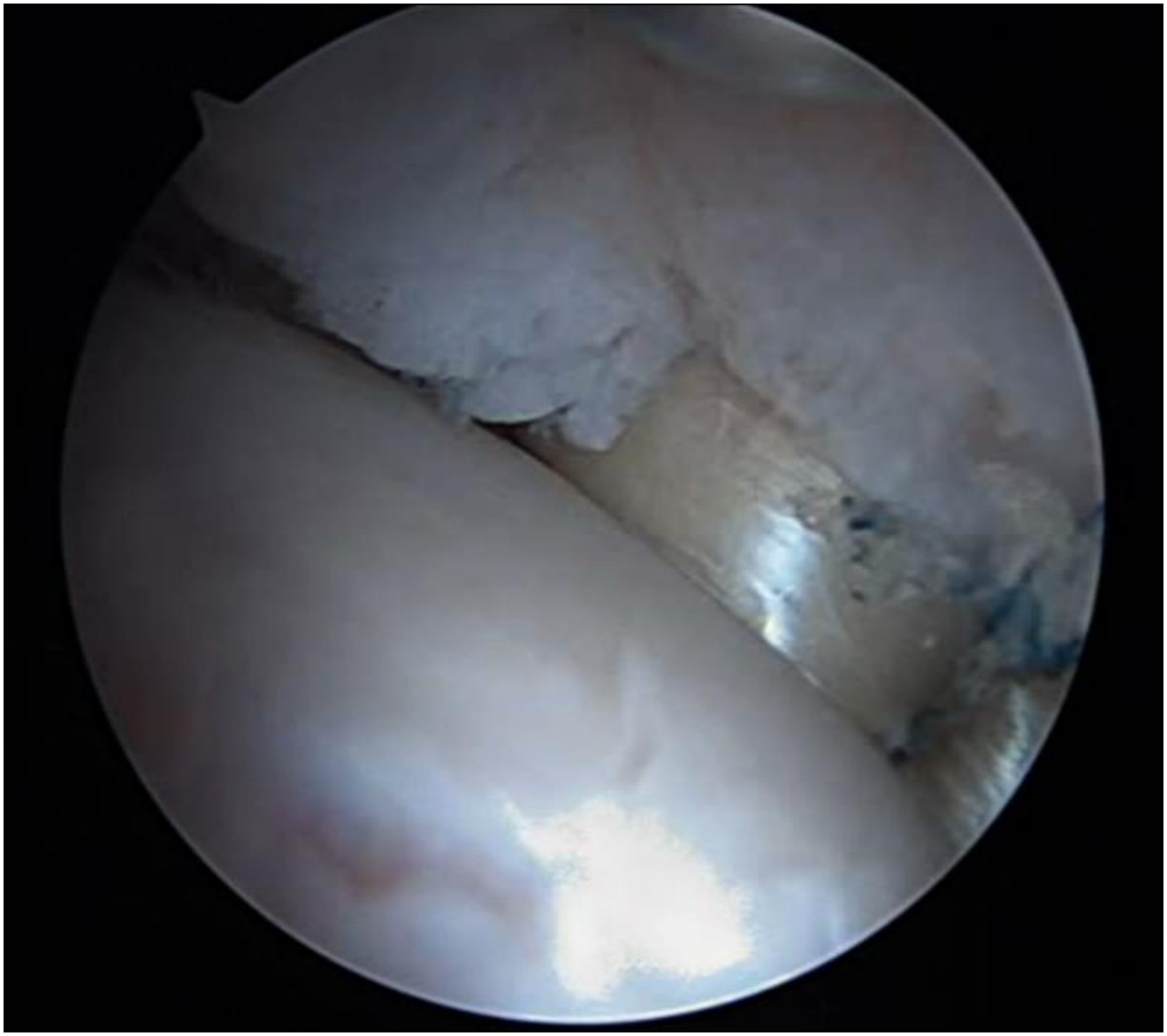
- Final 1-3 anchors placed
- Simple labral repair

Check Suction Seal

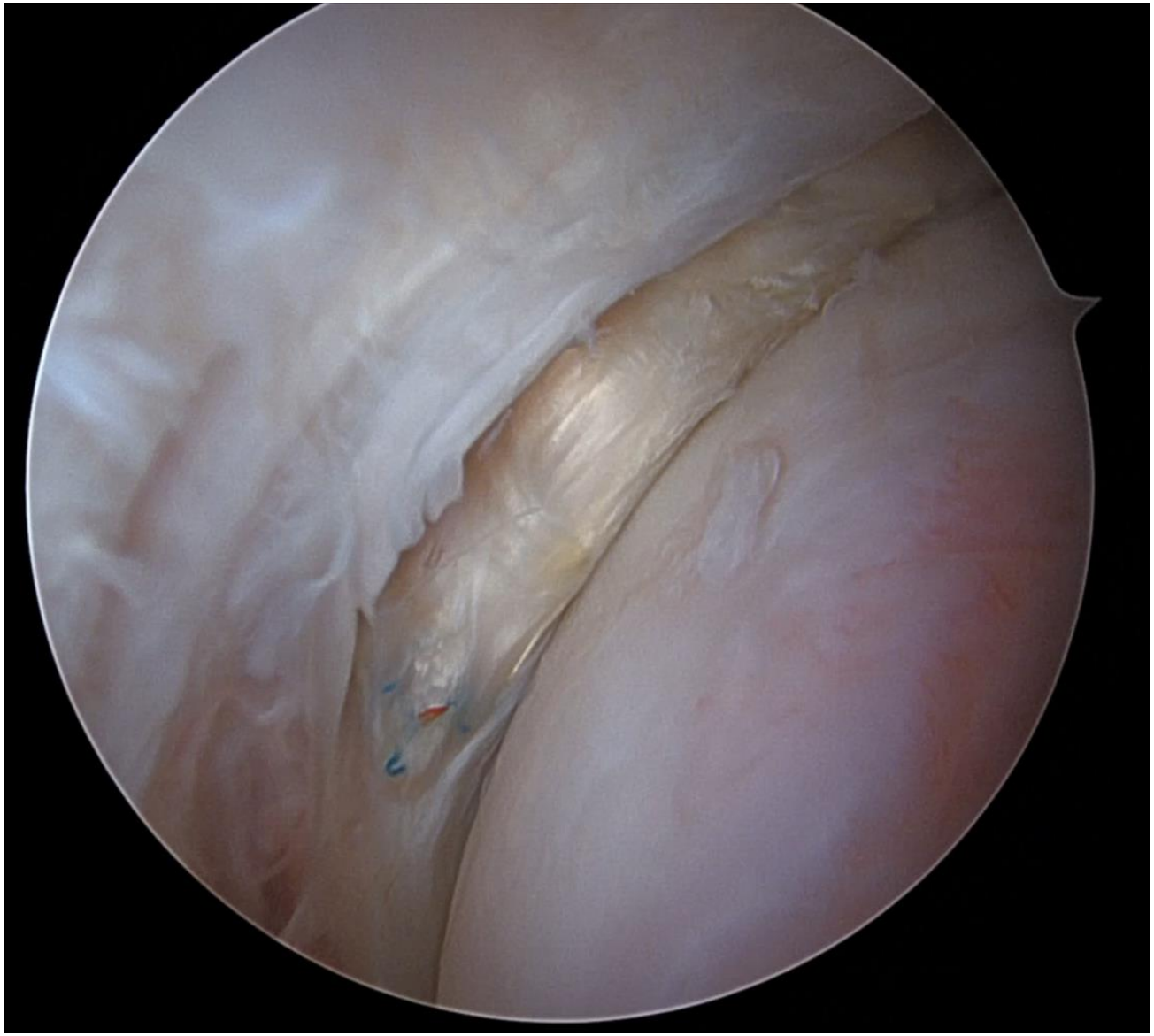


No Labral Mustaches!!

Check Suction Seal



Check Suction Seal

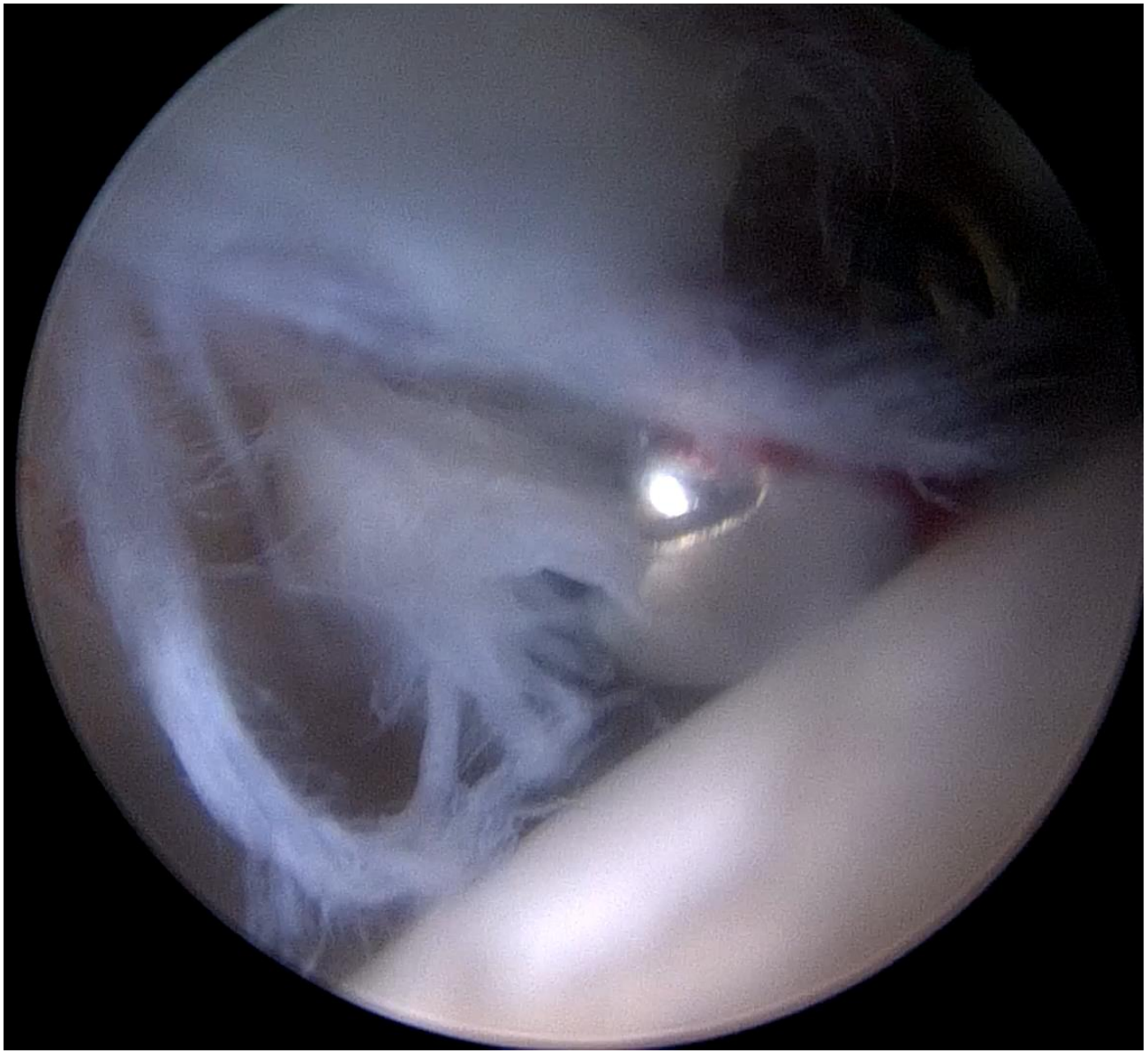


Is It A Labral Issue?

- High Index of Suspicion
  - Failed previous repair
  - Intrasubstance cyst
  - Small/everted labrum
  - Labral ossification
  - Os acetabuli/Acetabular rim fx

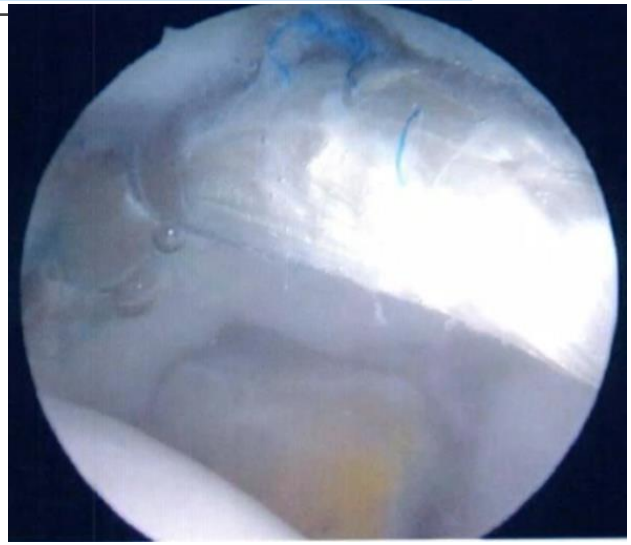
Labral Issues

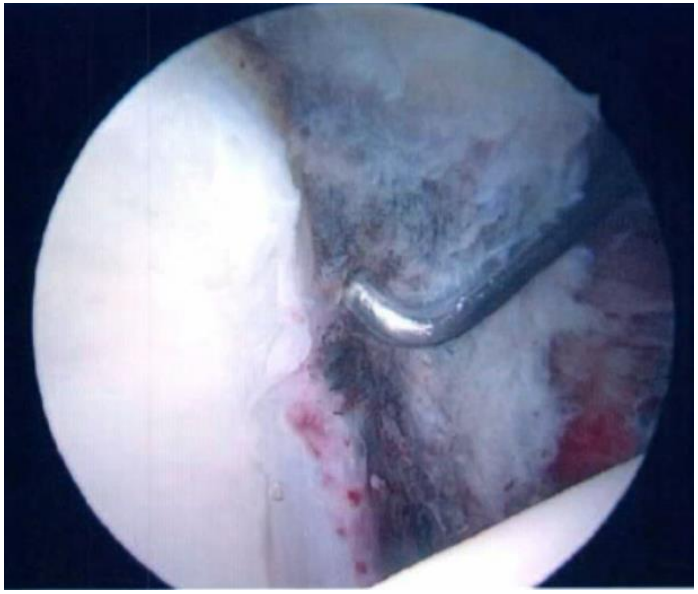
Intrasubstance Cysts/Synovitis

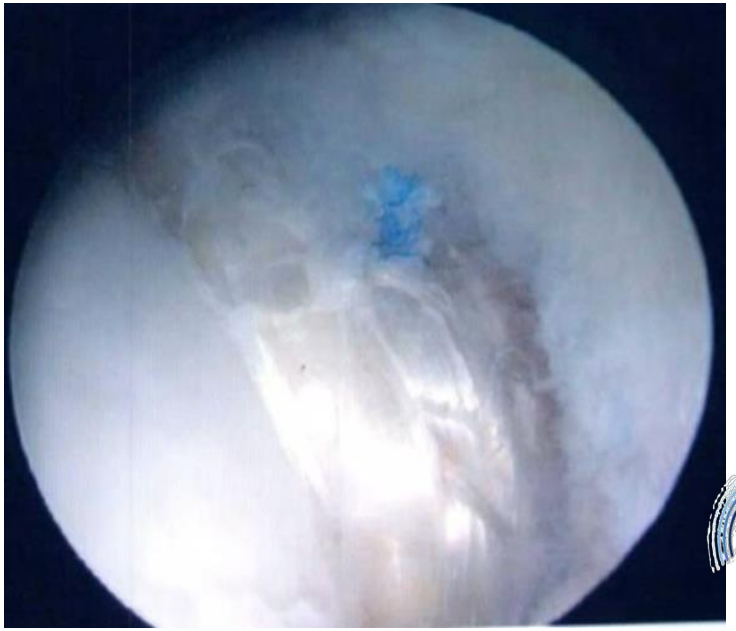


Labral Issues

Labral Insufficiency

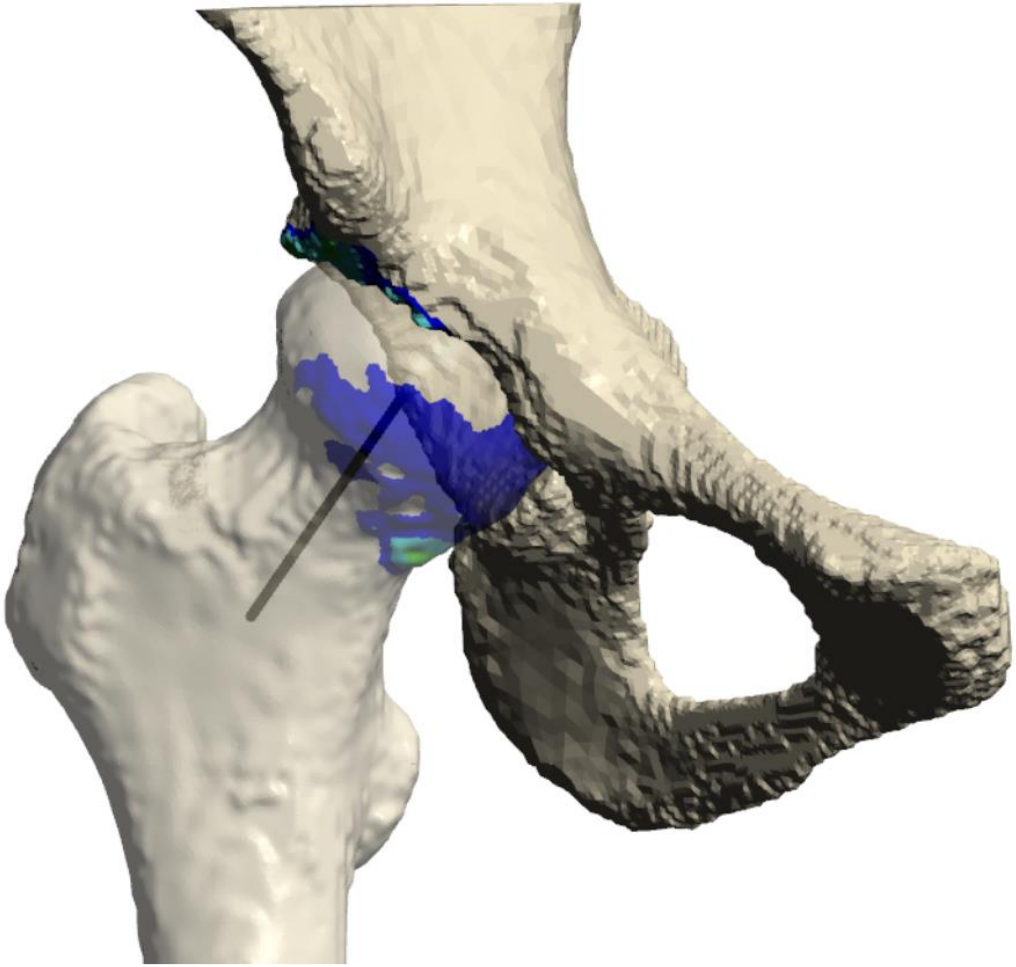




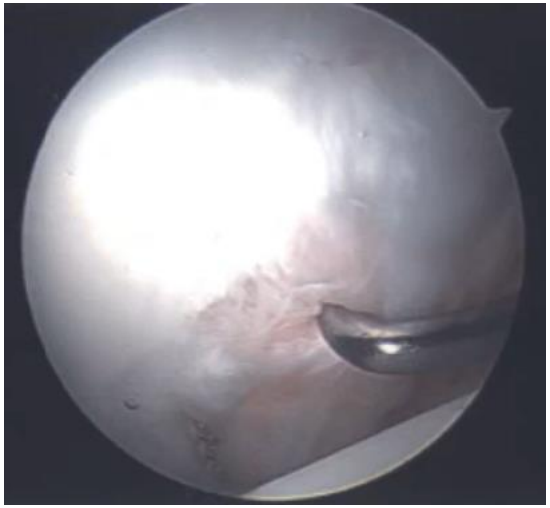


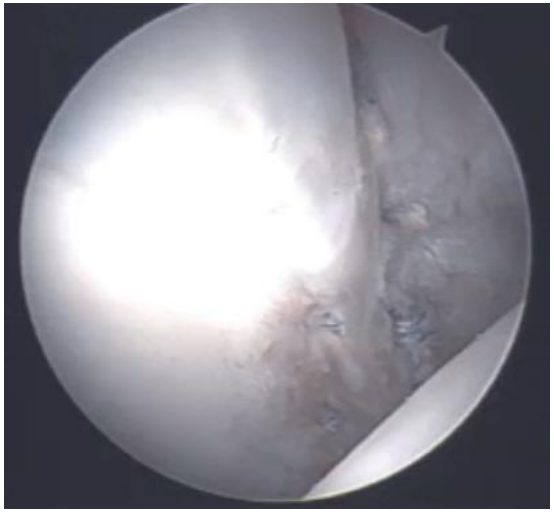
18 yo Female

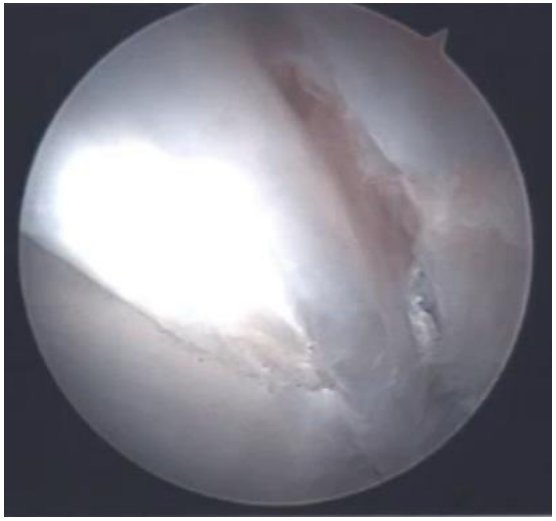
1 Year Post-op Return of Pain

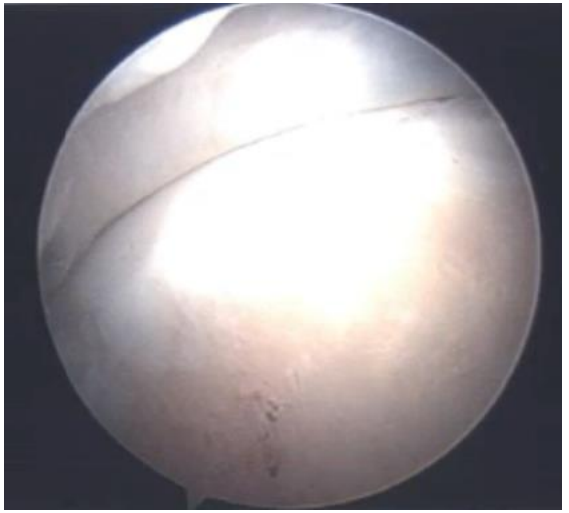


Labral Re-repair

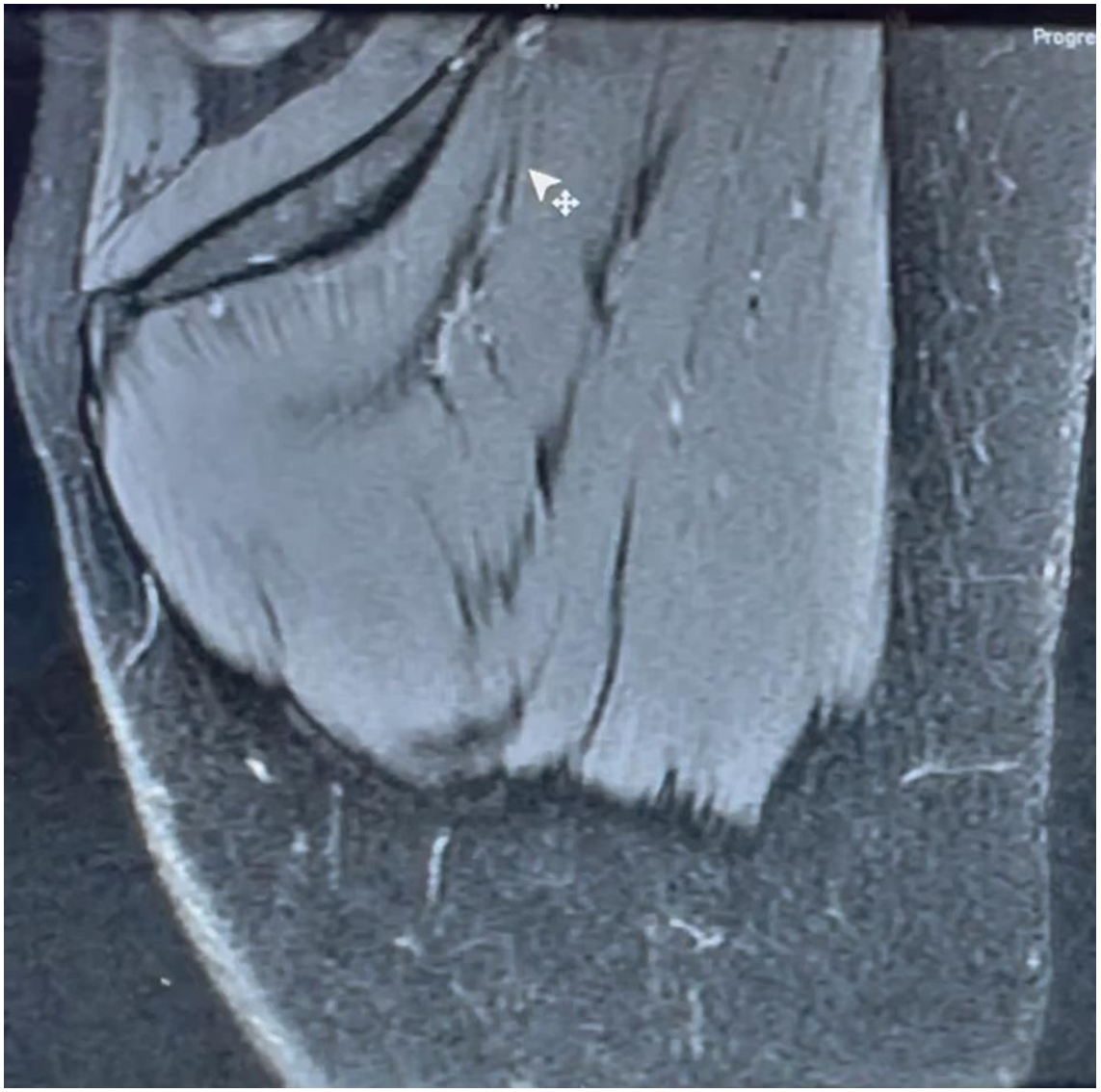








Labral Re-re-repair?



Personal Results

Primary Circumferential Acetabular Labral Reconstruction

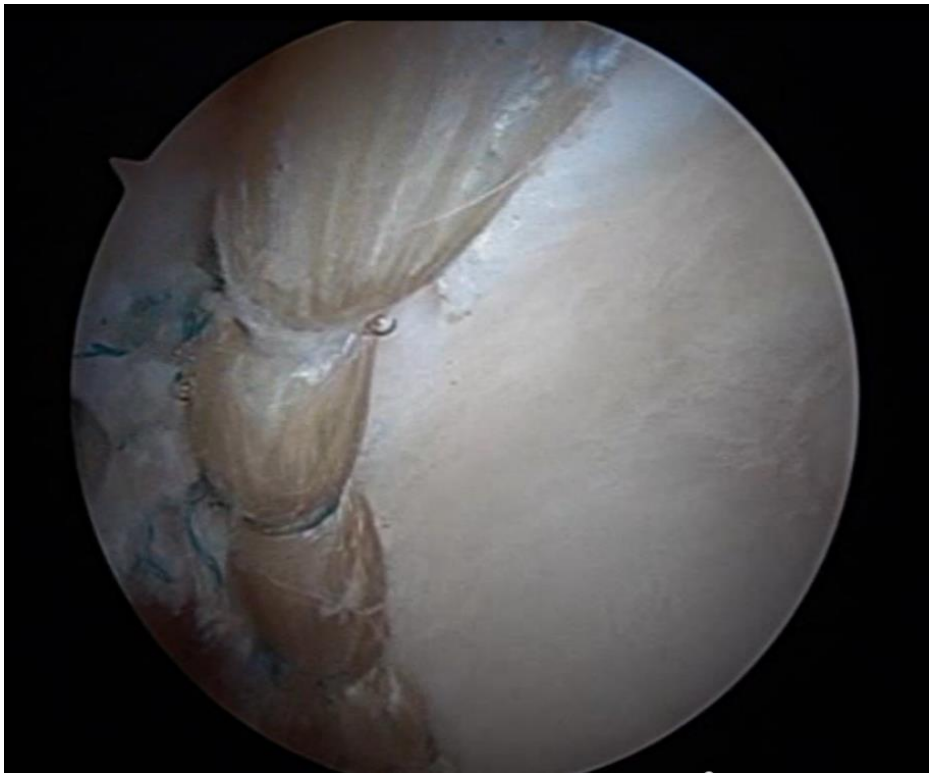
Achieving Outcomes Similar to Primary Labral Repair Despite More Challenging Patient Characteristics

John P. Scanaliato,* MD, Daniel L. Christensen,† MD, Catherine Salfiti,‡ BS, Mackenzie M. Herzog,§ MPH, and Andrew B. Wolff,‡‖ MD
Investigation performed at Washington Orthopaedics and Sports Medicine, Washington, DC, USA

The American Journal of Sports Medicine
2018;46(9):2079–2088

Personal Results

- 162 hips
  - 99 labral repairs and 63 *primary* circumferential recons
- 2 year follow-up
- Big differences between labral repair and reconstruction groups



The American Journal of Sports Medicine
2018;46(9):2079–2088

Personal Results

- Reconstructions
  - Older (43.4 vs. 29.5; $p<0.01$)
  - Higher BMI (24.6 vs. 23.0; $p<0.01$)
  - Higher Tönnis grade (25% vs. 9% grade 1-2)
  - Higher pre-operative pain scores (49.9 vs. 41.5; $p=0.01$)
  - More “severe” pathology (68% vs. 5%; $p<0.01$)
  - Five (5%) labral repair hips and five (8%) labral reconstruction hips failed treatment ($p=0.48$)

The American Journal of Sports Medicine
2018;46(9):2079–2088

Personal Results

- Both groups improved to similar and statistically indistinguishable degrees

- iHOT-12 improvement in repairs 31.7, recons 27.8 (p=0.18)

- This ***despite much tougher patient characteristics***

The American Journal of Sports Medicine
2018;46(9):2079–2088

5 Year Results

Primary Arthroscopic Labral Management

Labral Repair and Complete Labral Reconstruction Both Offer Durable, Promising Results at Minimum 5-Year Follow-up

John P. Scanaliato,*† MD, Clare K. Green,‡ BS, Catherine E. Salfiti,‡ BS, Cole M. Patrick,† MD, and Andrew B. Wolff,‡ MD
Investigation performed at Washington Orthopaedics and Sports Medicine, Washington, DC, USA

- At minimum 5-year follow-up, labral reconstruction produced similar outcomes to labral repair despite less favorable preoperative patient characteristics in the reconstruction cohort.
  - Patients in the reconstruction cohort were significantly:
    - Older (38.3 vs 29.9 years; P \ .001)
    - Had a higher incidence of severe labral tearing
    - Required a greater number of concomitant procedures
    - Were more likely to have Beck grade III or IV chondral damage (12.94% vs 1.47%; P\.001).

The American Journal of Sports Medicine
2022;50(10):2622–2628

Summary

- Persistent hip pain following arthroscopy is a complicated subject

- Many factors: patient, patient's problem, procedure performed, etc.

Summary

- Understand the patient's history and trajectory
- Different patients will progress at different rates
- The right thing to do at 6 weeks isn't usually right thing to do at 6 months or 6 years

Summary

- Persistent imaging problems do not necessarily correlate with persistent symptoms or necessarily predict ultimate outcome

Summary

- Be humble and thoughtful
- Remember, having a repeat surgery is a big deal.

Summary

- Treat what you can **safely** treat that is a possible problem
  - Scar tissue
  - Capsular repair
  - Revision cam/pincer
  - Labral treatment

Summary

- Have a low threshold to involve arthroplasty, osteotomy surgeons, other hip arthroscopy surgeons, PT's, Pain management specialists

- Good to develop a community of people to help you with these patients

Thank You!

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